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# DEFENSE INDUSTRY BULLETIN



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USAF FLIES INTO THE 70's



# DEFENSE INDUSTRY BULLETIN

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Suggestions from industry representatives concerning possible topics for future issues are welcome and should be forwarded to the Editor at the address shown below.

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#### About the Cover

The coming decade will be one of transition for the U.S. Air Force to support the Nixon Doctrine. Symbolizing the continuing transition of the Air Force, aircraft of the past stretch toward the future. From the bottom: S.E. 5A; 75A-1; B-17E; F-84F; B-52H; HH-3E Jolly Green Giant; C-5; B-1 advanced strategic bomber, still on the drawing boards. Air Force leaders discuss the next decade on pages 1, 3, and 6.

# The Air Force in the 1970s

*Excerpts from the address by Hon. Robert C. Seamans Jr., Secretary of the Air Force, at the Air Force Association annual convention, Washington, D.C., Sept. 23, 1970.*

The Nixon Administration, as you know, is in the process of re-examining both domestic and national security policy. The on-going comprehensive investigations by the National Security Council will continue and they will attempt to be as precise as is possible in redetermining our national goals and re-evaluating our national priorities.

One trend is certainly visible: the reduction of our forces abroad and austerity in our Defense budget. Taking inflation into account, the 1968 Defense budget of \$78 billion today would cost approximately \$85 billion. Our FY 1971 DOD budget is down to \$71.8 billion and this includes approximately \$4 billion for badly needed pay raises. Thus, in three years we have had a reduction of more than \$17 billion in terms of current dollars for defense programs other than personnel. Moreover, our FY 1971 budget is at its lowest level since before the Korean War, both as a percent of the Gross National Product and as a percent of the total Federal budget.

We face a number of difficult choices as we move into this era of reduced defense spending. We in the Air Force are very much aware of the vital domestic needs which place increasing demands upon the national budget, and we recognize that reducing defense expenditures frees resources to meet domestic needs and helps to curb inflation.

I might note here that defense spending alone is not responsible for the current inflation. For instance, the 1960 Federal budget of \$92 billion

has risen to almost \$201 billion—a \$109 billion increase. Yet defense spending accounted for less than \$30 billion of this increase. It follows, therefore, that there are limits to how much a reduction in the Defense budget can do to correct our overall national budget. Nevertheless, careful scrutiny of defense spending must continue, and reductions made whenever feasible. I am sure that you understand the compelling reasons for these past and present cutbacks, and how they, in turn, impact upon defense industry.

The shift of human and materiel resources that may no longer be needed for national security presents difficult problems. For example, in the last year the Defense Department reduced its civilian and military manpower by 471,000. Defense-related industry has reduced its employment rolls by nearly 400,000, with approximately 600,000 more expected by this time next year. Within the aerospace industry itself employment dropped by about 200,000 from May 1969 to May 1970, and a loss of 1 percent per month, or 120,000, is now projected through December. While there are indications that this rate of decline may flatten out after the first of the year, the fact remains that considerable technological and scientific and manufacturing expertise may have been permanently lost to the aerospace community.

We are now in a transitional phase, and the reduction in certain defense outlays which we hope to achieve is dependent, in considerable degree, upon firm understanding between the United States and the Soviet Union. We certainly want to give maximum opportunity for the on-going Strategic Arms Limitation Talks (SALT)



Dr. Robert C. Seamans Jr.

to be successful and to move nearer to the era of negotiation, which President Nixon and the American people seek, rather than confrontation. Current U.S. peace initiatives in the Middle East support this objective. We will continue to search for a solution to this volatile situation. The President is also lessening our involvement in Vietnam. In the last 12 months, we have reduced our forces in Southeast Asia from 500,000 to under 400,000 men and women.

\* \* \* \* \*

In our efforts to achieve an effective agreement in SALT, we do not intend any premature or exaggerated reduction in U.S. military strength which could undermine our long-term security. In the absence of an arms control agreement which would protect and enhance American security—we must take those actions which will ensure that we will still be able to deter a strategic attack during the next 5 to 10 years.

As each of you is aware, Soviet strategic forces are growing not diminishing, and it is the Administration's policy to provide the American public with the maximum degree of disclosure possible concerning the nature and scope of the threat. . . . [See *The Threat*, page 19, this issue.]

### Modern Forces Needed

For the Air Force to continue to maintain a credible deterrent, we must modernize our strategic offensive and defensive forces. Two developments increase my concern in this regard: first, the increased numbers and total payload of Soviet ICBMs, and second, the Soviet deployment of an initial ABM system and continued extensive ABM research. The combined effect could be a considerable reduction in the effectiveness of both our land- and sea-based missiles. We are deploying antiballistic missile protection for our missile fields and strengthening the penetration capability of our missiles with the deployment of multiple independent re-entry vehicles. There would be an inherent risk if deterrence were dependent on missiles alone.

To use a very rough analogy, two legs of a three-legged stool do not give us the same stability, even if greatly strengthened and enlarged. A dispersed manned bomber force, having quick reaction, is that third leg. It might be possible to undermine the effectiveness of either missiles or bombers alone, but to counter both at the same time would be a vastly more difficult problem. We must retain this stabilizing capability for the indefinite future. The B-1 gives us an improved system to do the job and represents the most economically feasible means to achieve this end. It is simply cheaper to replace the B-52 than to modify it and update it indefinitely. Given the decade of lead time involved, we must expedite the development of this aircraft. The decision to go into production will hinge on both development results and our strategic situation at that time.

\* \* \* \* \*

As we look toward our tactical requirements for the 1970s and 1980s, we see that the family of Soviet fighters is becoming superior to our own.

In the area of air superiority, skill and determination can go only so far in compensating for an aging system. The air-to-air combat problem is the primary concern in our development of the F-15, which will have superior capability for close-in, highly maneuverable combat. In short, it will provide the effective weapon system necessary to defeat an enemy fighter.

In another area of tactical concern, we are convinced that effective close air support will continue to be a vital mission for the Air Force and that an aircraft specifically tailored for that role is required. As a result, we are proceeding with the development of the A-X.

To modernize our airlift capability, we are relying heavily on the C-5, which will produce a revolution in air mobility. For instance, in 1973, with the C-5 in the inventory, projections indicate that we will be able to move an Army division with equipment and six fighter squadrons with support units to Europe in less than one week.

Now these key Air Force requirements, to which I have referred, are important. Nevertheless, each will be examined in light of the dollar constraints which I mentioned earlier, and will be weighed, among other considerations, against our personnel needs. These will be very difficult choices, and they will involve some tightening of our belts in both personnel and equipment areas.

What we are striving for, and I'm sure that you and a majority of Americans support this objective, is the maintenance of defense forces which are strong enough to keep the peace but, at the same time, do not unnecessarily absorb resources we need for progress in other areas. Although the active Air Force may be smaller in such a situation, I am convinced that our deterrent capability during the next decade can and will be effective. I foresee an Air Force that is leaner, more mobile, more streamlined, better equipped, trained and motivated and more volunteer oriented.

I want to emphasize that these qualifications must apply to our Guard and Reserve forces as well. Their contribution to America's deterrent strength has always been significant; yet, with reduced active duty

strength, there will be an increased reliance on both their combat and combat support units. One month ago Secretary Laird directed that, and I quote, "a total force concept will be applied in all aspects of planning, programming, manning, equipping and employing Guard and Reserve Forces." Further, the Secretaries of the Military Departments were asked to provide the necessary resources in FY 1972 and future budgets to permit the development of the balanced forces desired. Implementation of Secretary Laird's guidance is now underway within the Department of the Air Force.

### Industry Is Vital

Our Air Force, employing this total force concept, will, of course, continue to need the productive capacity of private industry, and its contribution toward advancing our technology is fundamental. In no other area of defense is this capability more vital than in the aerospace industry. Successful deterrence is fundamentally dependent upon our avoiding any significant technological gap in aerospace. This is a critical objective and we are dependent upon all members of the research and development community to help attain it, whether they are in industry, universities, or government.

In closing, let me say this. To meet the growing threat, the United States is reevaluating our long-range goals and attempting to bring our force structures and our short-range goals into harmony with them. This process does not involve laying down our world leadership, nor sacrificing the interests of our allies or friends. This process will take time, however, for the country to understand and adopt. It must involve frank public discussion, and I urge you in the Air Force Association to continue your signal efforts in stimulating constructive public involvement in the subject of our nation's security.

I hardly need convince this audience of the need for America to achieve progress through peace and security. It is a task as urgent today as in the time of our founding fathers. We must continue to redefine that task to satisfy the needs of our own age.

# Aerospace Forces for Deterrence

*Excerpts from the address by Gen. John D. Ryan, Chief of Staff, U.S. Air Force, at the Air Force Association annual convention, Washington, D.C., Sept. 22, 1970.*

\* \* \* \* \*

The expressions of policy that give direction to our efforts are contained in President Nixon's Feb. 19, 1970, Report to Congress on Foreign Relations. Most significant to the Air Force are those portions of the report dealing with the threat and with the purpose and design of this country's strategic and tactical forces.

These portions remind us first of all that "Recent Soviet programs have emphasized both quantitative and qualitative improvements in the capabilities of their forces."

... President Nixon, after addressing these aspects of the threat, set forth two specific questions:

First, "Should a President, in the event of a nuclear attack, be left with the single option of ordering the mass destruction of enemy civilians, in the face of the certainty that it would be followed by the mass slaughter of Americans?"

Second, "Should the concept of assured destruction be narrowly defined and should it be the only measure of our ability to deter the variety of threats we face?"

President Nixon also emphasized that the overriding purpose of our strategic posture is "... to deny other countries the ability to impose their will on the United States and its allies under the weight of strategic military superiority." He added that "We must insure that all potential aggressors see unacceptable risks in contemplating a nuclear attack or nuclear

blackmail...."

All of our preparations for the performance of this strategic role are aimed at these necessities. And additional guidelines that recognize these necessities have reached us in elaborated form through the National Security Council and the Defense Department.

In light of this guidance, there are key strategic tasks which the Air Force—as part of the defense team—must be prepared to accomplish for the remainder of this decade. Against the most critical possibility, that of a full scale attack on this country, we must be prepared to do two things. We must have the capability of destroying the remaining strategic weapons which the enemy no doubt would hold in reserve. We must also have the second-strike capability of destroying a sufficiently large proportion of his industry and population so that he would have no incentive for a full scale attack in the first place.

We're convinced that this dual capability will provide our best means of deterring or denying success to an attempted disarming first strike.

We're also convinced that the strategic force should continue to include what we call the *Triad*, consisting of manned bombers and land-based and sea-based missiles. This combination of retaliatory weapons complicates the enemy's problem of targeting and of timing his attacks. To a like degree, the *Triad* also complicates his problem of defense against a coordinated counterattack.

Now let's see how some of the new developments in national policy have affected the role of the Air Force at the tactical level of military operations. Again, the best indicators available on this subject are contained in



Gen. John D. Ryan, USAF

the President's Report on Foreign Relations. This document tells us first of all that "while strategic forces must deter all threats of general war, no matter what the cost, our general purpose forces must be more sensitively related to local situations. . . ." And it also tells us that while our country has 95 percent of the nuclear power of the non-Communist world, the planning for general purpose, or tactical, forces "must take into account the fact that the manpower of our friends greatly exceeds our own. . . ."

Combined with other statements on the Nixon Doctrine and the Asian policy, this guidance calls for a reduction of our military presence in overseas areas and for our allies to assume the primary responsibility for providing the manpower for their own defense. It further indicates, in my judgment, a corresponding need for greater reliance on U. S. airpower as a means of using our superior tech-

nology to full advantage.

In line with this guidance, we are placing greater emphasis on training and equipping the air forces of our allies. By far the most impressive example of returns on that effort is now offered by our part of the Vietnamization program in Southeast Asia. As a result of our advice and assistance, the fighter squadrons of the Vietnamese Air Force have consistently achieved operational standards comparable to our own.

Where the direct use of U. S. military forces is essential in protecting our interests, the Air Force is being called upon for more and better support in the fields of attack fighter operations and airlift.

In the tactical missions of interdiction and close air support, we've been able to capitalize on two advantages. One is the improved performance and mobility of our fighters. And the other is the greater effectiveness of our conventional ordnance against a variety of military targets. In our tactical operations, we've also devised much better equipment and techniques for accurate weapon delivery at night and in all types of weather.

Airlift in recent months has become a factor of growing importance. One reason for this is that we are facing sizable reductions in our forces that are permanently deployed in certain overseas areas. We therefore must depend more and more on airlift—both strategic and tactical—as a means of rapid deployment and resupply of those forces.

#### Aerospace Assets

In the process of using aerospace as a major arena for deterrent operations, we draw heavily on several assets. The most important asset is the superior skill and dedication of our people. Another asset is the basic validity of our operating concepts. And still another is the ability of our aerospace industry and technology to give us a qualitative edge in our weapons.

Measuring these assets against future demands, I can assure you that our people—the pilots, aircrew members and technicians—are getting better all the time. At every stage of experience, they know more, they attempt more, and they accomplish more than any generation I have seen.

As to concepts, I'll mention just one view of deterrence that runs through our thinking in the Air Force. Although many people see the effort to deter as an "either/or" proposition, we believe it's a dynamic process. Moreover, it's a process that remains both operative and effective at least in some degree at all levels of conflict below that of full scale war. In a conflict that is underway, for example, the enemy who foregoes escalation by reason of the greater risk involved has actually been deterred in a practical and important sense of the term. And that holds true even if he continues to fight on a reduced scale. We, therefore, want to confront him at all levels with a risk in relation to gain that is clearly prohibitive. At the strategic level, we have done that by combining a credible posture with a show of force when required. At the tactical level, these two measures have not in all cases been adequate to convey the message of unacceptable risk. So, the ability to use force on occasion as an instrument of operative deterrence remains essential to the protection of our national interests.

#### Demanding Task Ahead

So much for concepts. The most demanding task we face now in conjunction with science and industry is that of translating available resources into appropriate and effective weapons. One difficulty here is that maintaining an operational force is demanding a significant portion of the resources that otherwise could be applied against our future requirements. Thus tradeoffs, by necessity, are being made between the hardware needed for today and the more advanced development leading to such items as vertical takeoff aircraft and additional space systems.

I'm glad to report, however, that some of the systems we are trying to bring into the force over the next five years will incorporate important advances in technology. As one example, the use of weight-saving composite materials made from boron and graphite could open the door to major gains in aircraft performance. Depending on our needs, we might concentrate on the resultant opportunities for improvement in maneuvera-

bility and range. On the other hand, we might take our gains in terms of a greater volume and variety of conventional ordnance or the improved effectiveness of fire control and countermeasures equipment. In another development program, we are making progress toward guided weapons that can destroy targets under almost any condition of darkness or weather.

#### Future Systems

These are some of the ways in which we can achieve the modernization required to meet the threat. The funding for these and many other approved steps toward modernization is by no means assured. But their urgency is underscored by the fact that over half of our aircraft inventory is more than nine years old. I'm therefore going to discuss some of the more important new systems we expect for the future.

In the most critical area of strategic offense, we are scoring a measure of qualitative improvement in the ICBM force through the introduction of the Minuteman III. This missile, with a multiple independently targetable reentry vehicle, will be our best means of destroying time-urgent targets like the long-range weapons of the enemy.

To help modernize our strategic bomber force, it now appears that we will also get four squadrons of FB-111s. Equally important for this purpose, we have the B-1 advanced bomber approved for engineering development toward a first flight by the mid-1970s. We hope to have the B-1 operational by the end of this decade. This aircraft will provide our national leadership with many additional choices at all levels of conflict.

We must also combine these new strategic weapons with the more advanced communications, warning and reconnaissance systems that are needed for the effective management of our forces. One important step in that direction will be to obtain an Advanced Airborne Command Post as a replacement for the KC-135 that has been adapted for that purpose.

Satellite surveillance is another key element of our total arrangement for the command and control of forces. From the standpoint of aerospace operations, one of our primary interests

in this type of surveillance will be to obtain early warning of ballistic missile attack.

To achieve some degree of modernization in our air defense system, we are planning an Airborne Warning and Control System and Over-the-Horizon radars. We have an urgent need for the AWACS to replace the elements of the ground-based radar and control system that are now being phased down. This system could also be used to advantage for the command and control of our deployed tactical forces.

In our tactical forces, we are making some progress toward modernization with the F-111 and A-7 attack fighters that are now in production. Both of these aircraft will have a close-air support and interdiction role. We have high confidence that when we have completed the structural test program on the F-111 it should be the best all-weather attack aircraft in the world.

The A-X, as our primary close-air support system, will be the first plane that we have produced specifically for that role. Backed up by the A-7 and

the F-4, it will be able to fly lower and slower attack patterns and deliver heavy and varied payloads with greater accuracy.

To ensure control of the air against the tougher competition that we see ahead of us in the 1970s, we are developing the F-15 air superiority fighter. This fighter promises to exceed the performance of any competitive design we can foresee in the next 10 years. It should be operational by the mid-1970s.

In the airlift picture, the C-5—even at a reduced buy—will help give us a better than threefold increase over the capability we had in this field just five years ago. To modernize our tactical airlift force, we are evaluating two systems. One is a vertical/short takeoff and landing, light intratheater transport called the VSTOL LIT. And the other is a high speed, long-range medium STOL transport known as the MST. Each of these approaches, however, calls for a larger development effort than we can support within our budget for the next two years. So we are now in the process of selecting a transport that is availa-

ble for early procurement to provide an interim STOL capability. With adequate funding support, these systems undoubtedly will bring us to much higher levels of effectiveness.

In the strategic area, I believe our improvement will be measured chiefly in qualitative terms—greater selectivity of response, greater accuracy, and faster reaction. In tactical operations, our most important gains should be in close-air support and all-weather interdiction. In airlift, the greater capacity and efficiency of our large transports should continue to make these systems more competitive for all types of passenger and cargo movement.

Finally, we have to consider all of these gains in relation to a growing challenge presented by the thrust of Soviet technology. Only by meeting that challenge effectively can we ensure that aerospace continues to be an expanding matrix for deterrence—not a corridor of hostile aggression. That is a mission of hope and high purpose. It demands—as I said earlier—all of the ability and enthusiasm that we can muster.

## WWMCCS Request for Proposal Issued

The Air Force has issued Requests for Proposals (RFPs) to 17 companies for the replacement and modernization of data processing equipment at the World Wide Military Command and Control System (WWMCCS) headquarters, and related Intelligence Data Handling Systems.

Proposals are due February 1, 1971, and evaluation of the proposals is to be completed within approximately 90 days after receipt. The contract is expected to be awarded in May-June 1971.

The Department of Defense will procure a minimum of 15 new standardized computing systems for WWMCCS with an option for 20 additional computers during FY 1972-73. It is planned that a minimum of nine systems will be ordered in FY 1972. Machine sizes will range from medium to large.

If proposals result in prices exceeding \$46.2 million from all proposers for the hardware and software for the 15 systems, the Government may re-examine its requirements, re-

state such requirements, cancel or amend the solicitation and resolicit proposals for its requirements.

The procurement represents the first time the computing needs of command and control and intelligence users will be satisfied by machine systems acquired from a single source. Activities may tailor the standard configuration to meet individual requirements with the winning vendor's equipment.

The Air Force Systems Command's Electronic Systems Division at L. G. Hanscom Field, Massachusetts, is responsible for the selection of the automatic data processing equipment and associated software. The General Services Administration will negotiate the contract and the Joint Chiefs of Staff will be responsible for allocating equipment to users. The Defense Communications Agency is responsible for centralized software support.

Requests for Proposals were issued to:

Burroughs Corp., Defense, Space and Special Systems Group, Paoli, Pa.

Collins Radio Co., Richardson, Tex.  
Control Data Corp., Rockville, Md.  
Delta Data Systems Corp., Cornwall Heights, Pa.

Digital Equipment Corp., Waltham, Mass.

Electronic Associates, Inc., West Long Branch, N.J.

F&M Systems Co., Dallas, Tex.

General Electric Co., Federal Systems Operations, Bethesda, Md.

Honeywell, Inc., Federal Systems Division, Arlington, Va.

IBM Corp., Cambridge, Mass.

Kollsman Instrument Corp., Syosset, N.Y.

Philco-Ford Corp., Burlington, Mass.

RCA, Air Force/DOD Programs, Rosslyn, Va.

Sanders Associates, Inc., Data Systems Division, Nashua, N.H.

Xerox Data Systems, Rockville, Md.

Sylvania Electronic Systems, Eastern Division, Needham Heights, Mass.

Univac, Division of Sperry Rand, Corp., Washington, D.C.

# Airlift for Strategic Mobility

*Excerpts from a presentation given by Gen. Jack J. Catton, USAF, at the 25th Annual National Defense Transportation Association Forum, San Francisco, Calif., Sept. 23, 1970.*

I think it is important, before proceeding, that we remind ourselves that the military does not *develop* national policy. The military *serves* national policy. We do our utmost to meet the national objectives developed and established by our civilian national leadership—leaders chosen by the citizens of the United States. Today these leaders find a nation in a period of substantial transition. Probably a greater transition than we have seen in our lifetime. Our society is demanding that our leadership take a very careful look at where the nation is headed, and in what priority we should distribute our national resources and our national efforts—more to domestic needs, less to defense.

\* \* \* \* \*

In response to this policy, the emerging defense strategy is forming this pattern:

- Maintenance of strategic forces of unquestionable sufficiency.
- Limiting the use of American fighting forces in the offshore conflicts that, perhaps, can be handled better by the involved nations' manpower and American advice, weapons and financial support.
- Reduction of American garrisons overseas.
- Development of highly mobile, quick-reacting, hard-hitting, general purpose fighting forces available in the United States ready for use when and where required.

It is hoped such a military strategy will permit the nation—with accepta-

ble risk—to spend less for national defense and more towards solution of domestic problems....

\* \* \* \* \*

The challenge to us, then, is substantial—we must enhance the quality, responsiveness and power of the military forces that are retained.

Evolving military strategy places great dependence upon mobility—the right kind of mobility—rapid, reliable, responsive, and sustaining—the kind of mobility that will permit the President to have options.

One such option is the low profile abroad, the remote presence concept of Senator Stuart Symington, where there would be a reduction of U.S. troop strength overseas. A reduction, but with the full realization on the part of our allies and our enemies that strategic mobility would be able to return them as integral units, complete with battle gear and initial supplies.

For the first time we are achieving the capability to move the guts of our ground fighting forces—the heavy fire power—their armor—heavy tracked vehicles—rapidly—anywhere in the world. Contrast this with the classic example of the mobility we *didn't* have in 1950 when the North Koreans hurled 10 divisions across the 38th parallel, expecting to overrun the south and achieve a quick victory. We didn't have forces in place to meet such an attack, nor did we have the mobility to deploy an adequate counter-force rapidly. As a matter of fact, we could only put two rifle companies on the line. So, we traded precious lives and territory for time. It took two weeks for one division to arrive from Japan. Nine days later, two more divisions arrived from Far East areas. The first division from the con-

tinental United States—and here is the heart of the matter—did not arrive until D + 56 days. There is good reason to believe the North Koreans were convinced they could prevail before any outside force could be brought in. Fortunately, they were wrong, but only by the narrowest of margins.

\* \* \* \* \*

I'd like to point out that, while we are looking toward the future of mobility, this mobility we seek—that we need—is not only a function of airlift. We need mobility that is rapid, reliable and responsive—airlift. But we also require *sustaining lift*—90 percent of our logistics support must



General Jack J. Catton, USAF, became Commander, Military Airlift Command (MAC), Scott AFB, Ill., in August 1969. Previously he served as Commander, 15th Air Force, March AFB, Calif., and Deputy Chief of Staff, Programs and Resources, Hq., USAF, Washington, D.C.

come by sea. If we are to do our job properly for the Defense Department we must provide total strategic mobility and that includes sealift. I see no advantage—possibly even military disaster—in a situation where modern military and civilian aircraft team up to deliver a fighting force able to close with the enemy, only to find that an antiquated military and civilian sealift force can't sustain their effort....

With this background of the needs for strategic mobility in the emerging national policy and the military strategy that responds to it, I'll narrow the subject to airlift.

In the airlift portion, I can say we are gaining qualitatively. The C-5/C-141 team is contributing greatly to that kind of mobility we need. The brunt of the operation must fall to the active force which through its peacetime operations will have provided a base from which to surge.

#### Exercise for Contingency

We have to continually guard against atrophy—the disease in which a part of the body withers from lack of proper use. If we don't exercise our facilities, if we don't stretch our maintenance capability, if we don't work out our crews, just like a muscle, we'll lose the ability to flex, to respond.

We had that happen in the recent past when it took just about a year to get the C-141 fleet operating at a wartime level. And so this peacetime operation is a big one. Better than 150 modern jet aircraft are in the system each day. These aircraft operate daily at a better than six-hour utilization rate. They operate throughout the world with a reliability rate that charts consistently above 90 percent. And they do a cost effective job for DOD.

But running a logistics support service is our secondary responsibility. We must stay geared for the contingency. So when the time comes, the maintenance folks will be able to generate more flying time, the aircraft will easily hack the extra load, the flight crews will hustle even more, and our utilization rate will jump to over eight hours. And, if required, we can surge to better than 10 hours a day. We will meet the commitment at a time when to fail would have interna-



C-9 Nightingale aeromedical evacuation aircraft.

#### tional implications.

Fortunately, we don't have to go it alone with our active force. Our thoroughly successful Reserve Associate Program is there to help. Day in and day out, reservists provide us with a  $\frac{1}{3}$ -an-hour per day capability in our steady state operation while they train. These are the guys who fly with us every day. You know them and their story, but just let me bring you up to date.

Currently, we have 11 C-141 associate airlift squadrons and one C-9 associate air evacuation squadron.

The airlift squadrons are manned on a one-to-one crew-to-aircraft ratio, and our goal is an associate squadron for each active squadron.

The C-9 program has a most impressive record. This associate adds a full hour a day to the steady state utilization rate while helping to maintain a 99 percent reliability rate. Whether airlift or aeromedical, the materiel support squadron generates the additional flying hours, and the crews fly it off—all of this short of mobilization—thus using their training a productive airlift way.

In addition to the associate program, we have daily help from our National Guard units. They operate better than a dozen aircraft a day, getting around an 8-hours-per-day-per-aircraft utilization rate on the aircraft they operate despite the fact these birds are older, harder to maintain prop aircraft.

Even more important, both airlift facets of the Reserve program—the associate and the MAC-gained units—have substantial assets to contrib-

ute in time of contingency. In the case of the associate, we can count on an extra two or more hours on our active jet force aircraft every day, with the associate providing the whole package of maintenance, crew, and air terminal support. Our Guard C-124s are outsized airlift that still have life in them. They have difficulties. They are slow; they require support throughout the flow pattern on which they are used. I recognize that. At the same time, they do represent an outsized capability that could be very useful as MAC-gained units for some period of time.

A third source of lift available to us both in a contingency and normal situation is civilian augmentation. It's difficult to figure a utilization rate for our civilian augmentation in our day-to-day operations because we contract for a specific job. We get the aircraft without the regular utilization rate degraders, like maintenance inspections. But their contributions have been great and continue to be.

There has been a recent decline in tonnage since the Vietnam peak years of 1967-68 when we did \$700 million in commercial augmentation. But that decline is expected to level off. The tonnage may start to climb again as cost effectiveness dictates the paths of the future. In the past decade, the ton-mile cost dropped nearly 50 percent, bringing tariffs into the neighborhood of 10 cents a ton-mile, as more things become economically air eligible and air compatible.

The overall budget squeeze should also contribute to an upward trend as our sister services find they can no

longer afford to keep large inventories spread thin throughout the world. The speed and reliability of our force has shortened the pipeline time to the point where it is more economical to perform depot maintenance here in the United States than to maintain costly overseas facilities.

The proposed Army closed loop system—a potentially substantial airlift requirement producer—is a sample of what we look for in the future in cargo operations.

The passenger outlook is a continuation of the recent past, where commercial air has been the principal means of moving DOD passengers—in fact, 91 percent of our passengers last year were moved by commercial augmentation—the future posture looks for more of the same.

This produces a paradox: a peacetime need for commercial passenger airlift, but a greatly expanded contingency requirement for cargo service. This is precisely the reason we have encouraged the carriers to equip themselves with convertibles. However, we understand each air carrier operates for public convenience and necessity, and we must encourage each carrier to continue to look to the

civil sector for its primary source of revenue. Despite the fact we bought around \$600 million dollars of commercial airlift last year, DOD expenditures are too unpredictable to form an economic base for carrier equipment decisions.

In the emergency situation, we have an arrangement by which we can take advantage of the largest, most modern and capable aviation industry in the world—at a 10-hour-per-day utilization rate. This is the CRAF program—Civil Reserve Air Fleet.

This CRAF fleet is made up of the same carriers who perform for us in our normal day-to-day operation. Or, more precisely, it is the other way around. The carriers who handle our normal requirements do so only because they are committed to CRAF. Thus a CRAF commitment is the required key that opens the door to permit a carrier to get in on the peacetime augmentation buy. And that key must turn on modern equipment, passenger and cargo, preferably both, as represented by the convertibles. So in a contingency, we can tap these carriers for airlift, committed to us by tail number.

We have never had to use this force

in the past, but this 10-hour-per-day rate is a substantial capability when we need it. It equates to the movement of over 4,000 tons of bulk cargo and close to 18,000 passengers per day from the U.S. east coast to Europe. The cargo capability increases by 300 tons per day following introduction of convertible DC-10s in 1973.

CRAF helps us to meet our currently planned wartime passenger requirements, but the combination of Regular airlift forces, Reserve and CRAF does not meet bulk cargo requirements.

What's more, the CRAF cargo capability does not provide any outsize cargo airlift. Then two problems: the outsize, the bulk.

In the area of outsize, civil aircraft, including new generation wide-body jet convertibles, do not have the capability to transport outsize cargo or conduct roll-on, roll-off operations like the C-141 and C-5. Fortunately, an increasing number of C-5s with a prime mission of high density outsize cargo are becoming available to us. They represent our only real capability for this kind of operation in the future.

The bulk deficit on one hand could be erased by additional carrier buys of DC-10 or L-1011 convertibles or freighters. These aircraft do provide a great step forward in bulk cargo capability. On the other hand, the deficit could also increase as older 707s and DC-8 cargo-capable aircraft are retired. We intend to maintain a mix of wide-body stretch and standard jets to provide flexibility for small loads or for airfields without wide-body aircraft ground support equipment.

So the future demands of a *contingency* will be met by a smooth blending of the increased performance of our all-jet worldwide and highly professional military airlift aided by highly trained reservists and by commercial augmentation—a step up on our steady state operation. The future of that steady state operation looks busy.

It is a future with a great challenge to MAC . . .

The national policy and the military strategy that supports it makes tremendous demands on mobility. . . . We must assure the resources and the determination to meet the challenge. Our nation is depending on us.

## Prisoners of War

### Missing in Action

In connection with our efforts to achieve an honorable settlement in Vietnam, I want to mention one tragic issue that troubles all Americans. That is the refusal of North Vietnam to agree to humane treatment of prisoners of war or to provide information about men missing in action. Our present administration policy is to foster public discussion and focus worldwide attention on the plight of our prisoners of war in order to obtain proper treatment for them and gain their release. We in the Air Force greatly appreciate the efforts of the Air Force Association to get more Americans involved by expressing their concern over "just 1500" of their countrymen. . . . It is an important consideration in our nation's effort to achieve peace in Vietnam.

We have not done our job until we get those men home.

Robert C. Seamans,  
Secretary of the Air Force  
Sept. 23, 1970

# Financial Management Aspects of Weapon System Acquisition Policy

Robert C. Moot

*Excerpts from a statement by Hon. Robert C. Moot, Assistant Secretary of Defense (Comptroller), to the Subcommittee on Military Operations, House Committee on Government Operations, Sept. 23, 1970.*

As a foundation for my subsequent remarks, it will be helpful to briefly review this revised [Weapon System Acquisition] Policy, particularly those provisions which relate to financial management. Under [Deputy Secretary of Defense David] Packard's concept, a major weapon system will pass through three principal phases: conceptual development, full scale development, and production. . . . Careful assessments are made at the DOD level to ensure that each of the first two phases has been adequately and legitimately completed before the subsequent phase is entered. This sequential evaluation concept offers financial management advantages and poses financial impacts which I will discuss later.

As an additional point of background, it is important to consider the magnitude of defense procurement. The intent here is not to minimize the problem but to place it in perspective relative to total government outlays....

In order to gain this perspective, we should examine the investment level involved from two standpoints: magnitude and trend. To be truly meaningful, these data must be considered in constant dollars as well as in current dollars. In this way, real capability acquired as well as total financial outlays can be assessed. As shown (Figure 1), total defense out-

lays for procurement in constant dollars declined from 1954 to 1961 from just under \$20 billion to \$13.5 billion, increased to \$17 billion in 1963, declined to \$15.3 billion in 1964, then rose to a Vietnam peak of about \$21 billion in 1968-69, and is forecast to decline to just over \$15 billion in 1971.

As would be expected, non-war procurements amount to considerably less during 1966 to 1969. With the scheduled Vietnam phase-out, this line becomes representative of what we can expect in the future. It is interesting to note that at the end of FY 1970, the trend was approaching the 1964 pre-war level which was the lowest since 1954. This trend is of concern when viewed in the context of sorely needed force modernization.

Research development, test and evaluation funds held fairly constant at just under \$3 billion through FY 1959, held between \$6 billion and \$7 billion in 1961 to 1968 and have fallen to slightly less than \$6 billion for 1970-1971. Overall fluctuations in the past 10 years have not been especially significant. It is not expected that the new acquisition policy will materially influence this funding trend. Although, as mentioned earlier, certain developmental efforts may be terminated earlier, more intensified developmental and evaluation attention will be devoted to programs offering promise.

Two conclusions are drawn from these trends. With noticeably declining acquisition funds, the results of the new policy will not be as dramatic as may have occurred during times of more aggressive weapon system acquisition. There just is not as great a potential for vast improvement or

cost avoidance when procurements, especially new procurements, are drastically curtailed. On the other hand, it is clear that defense must acquire the maximum security posture possible within the limits of available funds. It is our intention to do this, and the new policy is expected to be instrumental in this effort.

With this background then, I will devote the balance of my statement to a discussion of: the normal financial controls which affect procurement, the financial management impact of the new Weapons System Acquisition Policy, and plans for additional improvement.

## Financial Control

Within the regular managerial practice of the Department, there are several functions which exert financial control upon procurement. These include the apportionment of appropriated funds, the preparation of the



Hon. Robert C. Moot

Five Year Defense Plan (FYDP), the Development Concept Paper, the regular budget review, Selected Acquisition Reports (SAR), Defense Contract Audit Agency efforts, and cost performance reporting.

The FYDP has increased in effectiveness as a financial control document since Secretary [Melvin] Laird introduced what I consider fiscal reality into the cycle. With the Secretary's fiscal guidance introduced early in the FYDP updating process, procurement plans and alternatives must be carefully reviewed and constrained to fund availability. These decisions are reviewed at several milestones in the Planning-Programming-Budgeting cycle.

The final FYDP contains a detailed Procurement Annex listing acquisition plans for the future five years. This feature facilitates a long range review of procurements, affords visibility to changes, and dictates that changes be properly justified.

The budget review provides a more

direct form of control over the procurements scheduled in the budget year of the FYDP. The review is performed jointly by my office with the Office of Management and Budget [Executive Office of the President]. Also participating is the Office of the Director of Defense Research and Engineering, and any other Assistant Secretary of Defense having a particular interest in a given acquisition. During this review, procurement plans are rephased or rebalanced to conform to the latest fiscal guidance and requirements. The status of production schedules is verified, and a final pricing check is done.

For each major acquisition, the system provides for a Development Concept Paper (DCP) to be prepared showing the production quantities scheduled in the FYDP, the mission capability required, and an independent cost estimate by the Assistant Secretary of Defense (Systems Analysis). Frequently the DCP also lists design/capability options and the

budgetary impact of the tradeoffs between the options.

After the DCP is issued and approved, major acquisitions fall under the Selected Acquisition Report (SAR) system. . . . Since the SAR is one of our more significant and useful controls, I will deal with it in some detail.

#### Selected Acquisition Report

The SAR is a standard, comprehensive, summary status report on major acquisitions for management. The report was developed specifically to meet the requirements of management control within DOD as well as stated Congressional review needs. The report has seven sections:

- Descriptive Cover Sheet.
- Summary and Highlights Page.
- Operational/Technical Characteristics.
- Schedule Milestones.
- Program Acquisition Costs.
- Contractor Costs.
- Additional Procurement Costs.

### Trends in Defense Procurement

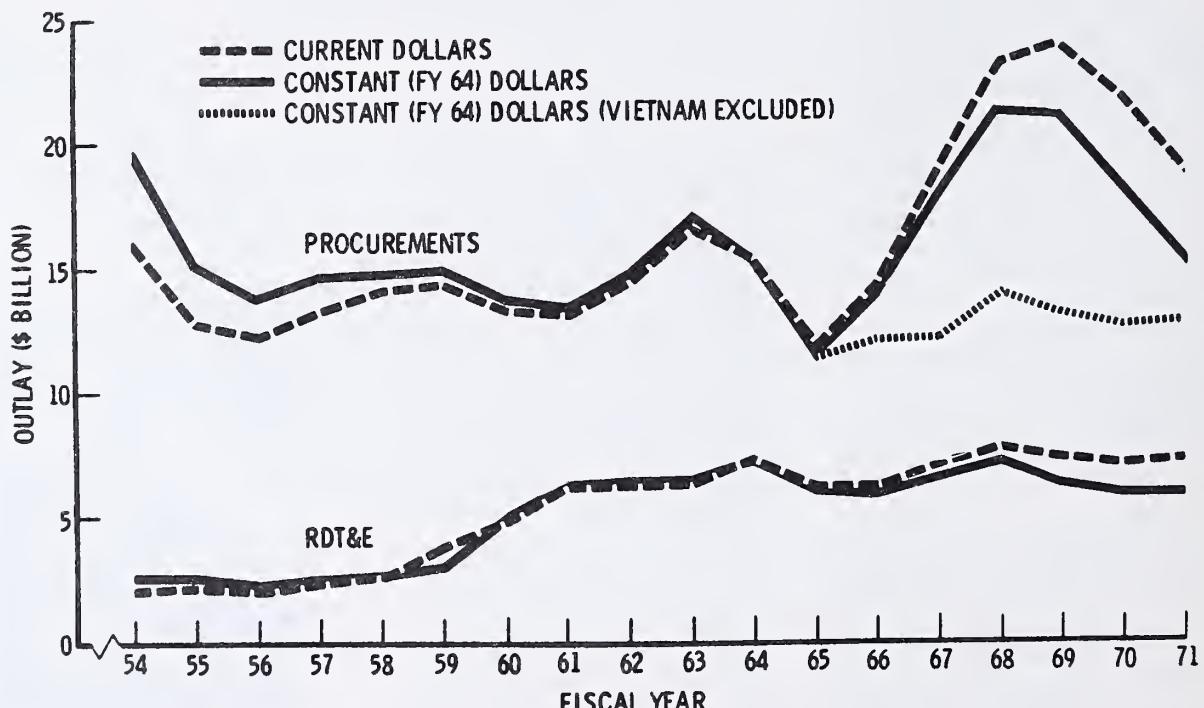


Figure 1.

The technical, schedule and program acquisition cost sections are the central parts of the SAR. These sections show current estimates compared to planning estimates and development estimates, and require analysis of the reasons for any variance from the earlier plans. Demonstrated performance is also required in the technical section. The contractor cost section also contains current price estimates, both government and contractor, and compares them to original contract prices.

SAR reports are prepared as of the end of each calendar quarter by the project managers and are submitted through the Service Chief and Secretary to the Secretary of Defense. The Secretary of Defense then forwards selected reports as requested by the Senate and House Armed Services and Appropriations Committees for information. The General Accounting Office also receives copies of the SARs. As of June 30, 1970, 56 programs were included in the SAR system, and 36 of these were being regularly reported to the Congress.

\* \* \* \* \*

The format and procedures which are now in effect for the SAR system are reflected in the version of DOD Instruction 7000.3 which became effective on June 12, 1970.\*

Several benefits have come from the SAR.

The first benefit is that the Secretary of Defense and the Congress are now able to monitor the progress of the DOD major acquisition in a standard, comprehensive, regularly recurring fashion.

Another benefit of the SAR has been to make DOD aware of shortcomings in its planning and to reveal improvement opportunities. For example, to a great extent DOD now has a consistent policy to deal with inflation in program costing, has defined precisely what cost categories are considered part of program acquisition cost, and exactly what are plan-

ning estimates and development estimates because of the SAR.

A third effect has been to reveal potential improvements in the management systems of the DOD. In its role as a passive status report, the SAR frequently shows that decision documents require updating or are not consistent.

A fourth benefit is that the SAR provides a common data base. No longer is it necessary to discover what is, or whether there is, a latest estimate of the cost, schedule, or technical performance of a system. The facts of a situation are clearly and consistently presented in the SAR.

The fifth benefit is that management attention is directed on the problems by the SAR. The report closes the feedback loop and compares actual to plan. When a system is not going according to plan, then top level management is directed to the problem. In this manner the SAR relates to the Development Concept Paper. The DCP is a decision document which contains technical, schedule, and cost estimates with certain review thresholds. The estimates from an approved DCP constitute the planning and development estimates for the SAR. The quarterly SAR compares the latest estimates to the plans. If a threshold is broken, it is disclosed in the SAR and a Secretary of Defense review is initiated.

#### Audit Reviews

Another form of financial control results from the effort of the Defense Contract Audit Agency (DCAA). This agency reviews contractors' proposals on all major acquisitions to assess estimated costs represented by the contractors. It determines the adequacy of contractors' accounting and financial management systems to ensure that proposals, estimates and statements of costs incurred are developed from acceptable source data. DCAA also assists contract administrators through advice on the validity of incurred costs, adequacy of financial aspects of contract provisions, adequacy of contractor accounting and procurement systems, and adequacy of property controls. This assistance is rendered through on-site auditors on major acquisitions.

#### C/SCSC

One of the major efforts designed to improve financial management in the systems acquisition process centers around the Cost/Schedule Control Systems Criteria (C/SCSC). These criteria represent DOD standards for acceptability of the internal systems used by contractors to plan and control program costs and schedules. The objective of the criteria approach is to make maximum use of the internal management systems which the contractor has designed to satisfy his needs, rather than to impose a rigid DOD system on him. The criteria set forth the capabilities that a contractor's management system should possess and define the data elements which the system must be able to produce. Effective implementations of the criteria call for only top level summaries of such data to be provided to DOD program managers. By applying criteria rather than specific management systems, we give the contractor needed flexibility in determining how he will meet DOD requirements.

The current set of criteria is the product of an evolutionary development which began in the early 1960s after unsuccessful efforts to implement the PERT cost system. While most people readily acknowledge the inherent advantages of stating requirements in terms of criteria, rather than by detailed procedures or methods, considerable misunderstanding of our real requirements also exists. Criteria which are too broad can be met by systems which still may not produce acceptable data. Criteria which are too rigid can produce a situation where only one specific type of system can meet the requirements. While there is undoubtedly room for additional improvement, the existing criteria have remained stable for almost three years and we do not foresee substantive revisions in the immediate future.

To date, the military services have placed the performance measurement requirements on nearly 60 contracts. They have performed nearly 50 evaluations of contractors' systems and have accepted 13 systems as fully complying with the criteria. We expect to see several more validated within the next few months.

\*DOD Instruction 7000.3 may be obtained without charge, one copy per request, from the Naval Publications and Forms Center, Attn: Code 300, 5801 Tabor Ave., Philadelphia, Pa. 19120.

With all three military departments now actively involved in the evaluation review process, plus prime contractors passing the requirements along to major subcontractors, it will not be long before almost every major defense contractor in the country will have been exposed to the criteria requirements to some degree.

Therefore, we will soon begin to place greater emphasis on the maintenance and surveillance aspects of the program. Our long-range objective is to make C/SCSC implementation and validation a normal routine part of the contract administration function performed by the Defense Contract Administration Services [of the Defense Supply Agency] and our military plant representatives and DCAA auditors. This would eliminate the need for the initial demonstration review process and reduce the overall effort required by the Services to support the program. The Services are currently developing joint procedures and training material which will contribute to achieving this objective. In fact, a Joint-Service Implementation Procedures Manual was published in August by the Joint Logistics Commanders.\* Additional materials designed to improve understanding of DOD requirements are in the final stages of development.

#### Impact and Plans

It is clear that the new policy will result in improved cost estimating prior to production since we will know much more about a weapon system before it enters production. At the same time, there will probably be a longer period of time between initiation of development and full production, and certain budgetary implications could result. For example, we might expect more proposed systems to attrite after a period of initial development. Those surviving the various review milestones would recur through several budget cycles as their development progresses. Costs could

be spread over a longer time and thus would be subject to more review if considered appropriate by Congress or DOD. Weapon system decisions will be based upon more realistic cost data, and priorities within available resources will be more accurately established. I also expect that through earlier assessment of total system costs, DOD will have an opportunity to forego sunk costs in cases of questionable potential or of unacceptable cost effectiveness.

As I mentioned, we are continually improving the Selected Acquisition Report. It is also our intent to use SAR data to improve and update other management systems affected by the SAR, especially DCPs. Lastly, I must emphasize that we in DOD are constantly searching for new ways to use SAR data to operate more efficiently in the weapon acquisition process.

Much of the so-called "cost growth" is directly attributable to poor cost estimates. If DOD is to have the information necessary to make the proper management decisions early in the acquisition process, we must improve our initial cost estimates. To this end we are presently building up and standardizing a data base derived from past cost experience, developing improved estimating procedures, and encouraging independent cost estimates. We are working to implement the Cost/Schedule Control Systems Criteria which makes optimum use of the contractors' internal management systems to monitor DOD contracts. By providing for the division of a contract into a logical work breakdown structure, the Cost/Schedule Control Systems Criteria will improve our cost estimates, and make it easier to match costs with the work completed throughout the life of the contract.

We are considering changes in the DOD contract financing policy which would tighten up contract financing procedures by providing for a more explicit statement of financing terms in the contract and increasing the visibility of DOD contract financing costs. These changes will result in DOD expenditure savings and will ensure that a contractor has an adequate cash investment in his DOD contracts.

#### Solid State Microwave Transponder Developed

High peak power—from 100 to 150 watts—solid state microwave generation is being used for the first time by the Air Force in a specialized military navigation beacon scheduled for initial evaluation test before the end of the year.

The advancement was reported by AFSC's Rome Air Development Center (RADC), Griffis AFB, N.Y. Along with Cornell University researchers, RADC has used solid state technology in Limited Space-Charge Accumulation (LSA) for the past four years. LSA is a solid state, radio frequency transmission source.

RADC engineers applied solid state technology in the design of the new land-based beacon containing a dual transmitter and receiver for communicating with navigation radar equipment in aircraft. The beacon, or transponder, receives or transmits signals when it is activated by a radar signal from an aircraft at either X or Ku band frequencies.

The new transponder is unique, according to RADC engineers, because it is completely solid state, and fulfills a multiple capability needed for current and future aircraft operational requirements.

Early beacons were designed to operate in X-band radar frequencies, while late model and probably future Air Force aircraft will be equipped with Ku frequency navigational equipment.

In preliminary studies the LSA has revealed a vast improvement over the magnetron tubes previously used for radio frequency power generation. The LSAs also appear to have a life expectancy well in excess of the magnetron's 500 hours.

LSAs, compared to magnetrons, operate with a greatly reduced input power requirement. This permits dual capability in approximately the same size package as current single band beacons, with comparable on-the-air requirements.

The new beacon was built under a contract to Vega Precision Laboratories, Inc., Vienna, Va., with Cayuga Associates, Ithaca, N.Y., one of the leaders in LSA development, as subcontractor.

*\*Cost/Schedule Control Systems Criteria Joint Implementation Procedures is available from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Order No. D 301.35/3:173-3; price 70¢.*

## Year of Change

**Major General Edwin I. Donley, USA**

The massive task confronting the Army in the immediate future, succinctly and accurately summarized in the phrase "doing more with less," demands innovation at every level of the service.

Imaginative application of new technology has long been a trademark of Redstone Arsenal, home of the U.S. Army Missile Command. The men and women who manage the Army's missile and rocket programs also made substantial contributions to two of the past decade's major technological undertakings: space exploration and ballistic missile defense. Today they are passing a personal test as severe as any they have ever imposed to evaluate the quality of their missiles.

They are adapting their methods of doing business, their organization and their many individual talents to meet a series of challenges triggered by reductions in defense funding and manpower that have made 1970 a year of unprecedented change.

In addition to managing the ongoing missile program and all that task entails, the command, by the end of this calendar year, will have reduced its civilian work force by 15 percent, reorganized, and implemented its portion of PROMAP-70, the Army Materiel Command's (AMC) major new program to improve the materiel acquisition process.

Since most of the Materiel Command's other major commodity commands are undergoing similar changes in 1970, what is happening at Redstone Arsenal bears examination both for its immediate effect and what it may portend in the relationship between the Missile Command and the aerospace industry upon which it de-

pends for the advanced weapon systems it manages for the Army.

The Army, traditionally, has relied heavily on its own in-house competence as a cornerstone of its management technique.

Not many years ago, that technique of management was a source of continuing suspicion on the part of the aerospace industry. The fear, sometimes stated, that Redstone Arsenal would become in fact as well as name "the missile arsenal" and therefore an outright competitor with industry lingered even after the Army transferred its in-house fabrication capability, at Redstone, to the National Aeronautics and Space Administration in 1960. It seems finally to have been put to rest in 1965, when the Missile Command, after careful evaluation of competing concepts for a missile assault weapon, chose an industry version for development in preference to a concept originating in its own laboratories.

Those in industry who might fear a turn to Army in-house development and production of missile systems as a result of a tightening budget need not be concerned. The Missile Command is intensely interested, however, in preserving its own management capability, a resource carried almost entirely in the minds of its people involved in missile research, development, procurement, supply and maintenance. That's why an impending reduction within the civilian work force posed the first and toughest of the many challenges faced by the command this year.

Never as heavily involved in support of Southeast Asia as most of AMC's other commodity commands,

the Missile Command experienced no large buildup in civilian personnel after 1965. Military personnel strength has been relatively stable for 10 years, about 1,100. Beginning in 1968 at a level slightly below 10,000, however, the civilian strength began to drop off. Between June and December of 1968, the Missile Command lost 430 civilian spaces; in the next 12 months, 400 more. Both directed reductions were handled through normal personnel attrition. In March of



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this year, the command received direction to reduce a further 1,117 spaces by June 30. A formal reduction in force began.

The man who coined the phrase "personnel turbulence" must have had in mind what occurs in a large organization when Civil Service procedures are invoked to reduce the civilian work force. He caught it all in two words. Accomplishing the reduction of 1,117 involved many more individuals than that number would indicate. About 2,400 civilian employees were affected in one way or another by the reduction in force due to downgrading actions, reassessments, transfers to other agencies, and separations. Despite the large number of persons involved, a vigorous outplacement program, numerous retirements and other planned management actions, resulted in less than 250 full time civil service personnel being actually separated from government service to reach the new manpower ceiling.

#### Full Disclosure Policy

Operating in the belief that men and women given cause to worry about the permanence of their jobs are seldom able to concentrate completely on their work, the Missile Command adopted a policy of maximum disclosure in its dealings with its people, the Federal employees union which represents them and the North Alabama communities where they make their homes. No one liked what he heard, but no one had reason to doubt that he heard it straight.

Confronted with a similar need to reduce its work force, industry has certain latitude in selecting who goes and who stays, a choice not available to the government manager. In the Missile Command's experience, management creditability was increased by an early policy decision, rigidly adhered to, to conduct the reduction in force by the book. This meant literally, no exceptions, a fair procedure but a hard one for managers to live with when experienced teams are broken up in conformance with the Civil Service retention ground rules based on seniority and veteran's preference as well as job qualifications. A manager's instinctive belief that key people, lost in such a process, will not be replaced by individuals just as capa-

ble, may have a basis in logic, but none in law.

On July 1, as a result, industry found new faces in many familiar places at the Army Missile Command.

#### Reorganization

Once the personnel changes were completed, the places began to shift as well, as the Missile Command realigned its organization to conform to the standard organization structure recently adopted by AMC for all its commodity commands. The realignment is to be completed by the end of this year as a necessary step preparatory to the use of standard management information systems throughout AMC.

The Army Missile Command's new organization, shown on the accompanying chart, represents no drastic turn away from the past; rather it is a modification of the structure under which the command had been operating. The concept of vertical management pioneered in the Army missile program and later formalized and refined in the project/product management technique within the entire Materiel Command is being continued on each of the Missile Command's major weapons programs, although project management office staffing has been reduced by about 20 percent. Dragon, Hawk, Lance, Pershing, SAM-D, Shillelagh and TOW are systems directed by project managers chartered by the Secretary of the Army. A project manager also directs Air Defense Control and Coordination systems and target missiles.

A product manager—chartered by the commanding general, AMC—directs the Land Combat Support System.

Three special items managers have been added in the new organization. The Land Combat Special Items Management Office will oversee continuing support for the operational Sergeant and Honest John systems as well as managing the aircraft weapons program. Responsibilities of a counterpart operation for air defense will include the Redeye and Nike Hercules systems, both discontinued as project managed weapons earlier this year. The Chaparral Air Defense System will be run by a separate special item management office.

In the command group, the Missile Command will be operating with one Deputy Commanding General instead of two as it once did. Formerly the command had two deputy commanders, colonels in charge of Air Defense Systems and Land Combat Systems. The posts have been retained as special assistants to the commanding general in the new organization with similar responsibilities.

Principal staff offices are in line with similar organizations of comparable size within the Army. The Missile Command Legal Office now combines both procurement law and military law within one office, functions formerly carried on in separate shops. Industry will find the Missile Command Patent Center a part of this combined function.

The Directorate for Management Information Systems, first element of the new organization to be activated, centralizes all command automatic data processing activities. Another totally new organizational element, the Directorate for Plans and Analysis has responsibility for all long range planning and emergency planning. It also picks up systems analysis formerly carried out in the Research and Engineering Directorate.

Acutely aware of the need for quality in all phases of missile operations, the Missile Command has long operated with centralized overview of quality control, now brought to an even tighter focus. Everything connected with the word in an organizational sense has been consolidated in the new Directorate for Product Assurance which, building on the 50-man nucleus of the former Product Assurance and Test Management Office, has added almost 300 other quality specialists from other elements of the old organization.

The buying portion of the "doing" operation, executed by the Directorate for Procurement and Production, remains virtually unchanged. Functions pertaining to configuration control and standardization formerly carried out there, however, have been transferred to the Directorate for Research, Development and Engineering.

Industry will note extensive changes both in the names and internal alignment of the command's research and development setup and

supply and maintenance operations. The former is oriented primarily to the concerns of tomorrow and the latter to those of today—support of operational missile and rocket systems used not only by the U. S. Army, but by numerous allied nations as well.

Supply and maintenance operations, traditionally carried on in the command in a single organizational element have been split. The Directorate for Maintenance handles all missile maintenance including publications and technical assistance. The Directorate for Materiel Management assumed the missile system supply functions as well as overall responsibility for materiel readiness.

On the research and development side, the directorate reorganized with five major offices. Establishment of the Systems Integration and Engineering Office was a move designed to improve the command's ability to pro-

vide engineering support to project managed systems and to establish an engineering base to support systems no longer in production but still in active use. The Advanced Systems Concepts Office replaced and carried on most of the functions formerly performed by the discontinued Future Missile Systems Division. An Advanced Research Projects Agency Support Office serves as the command's interface with the Advanced Research Projects Agency of DOD and acts as ARPA's agent in administering many research tasks. This mutually beneficial association, dating back more than a decade, has resulted in substantial advancement of missile technology, particularly in such areas as electronics and propulsion systems.

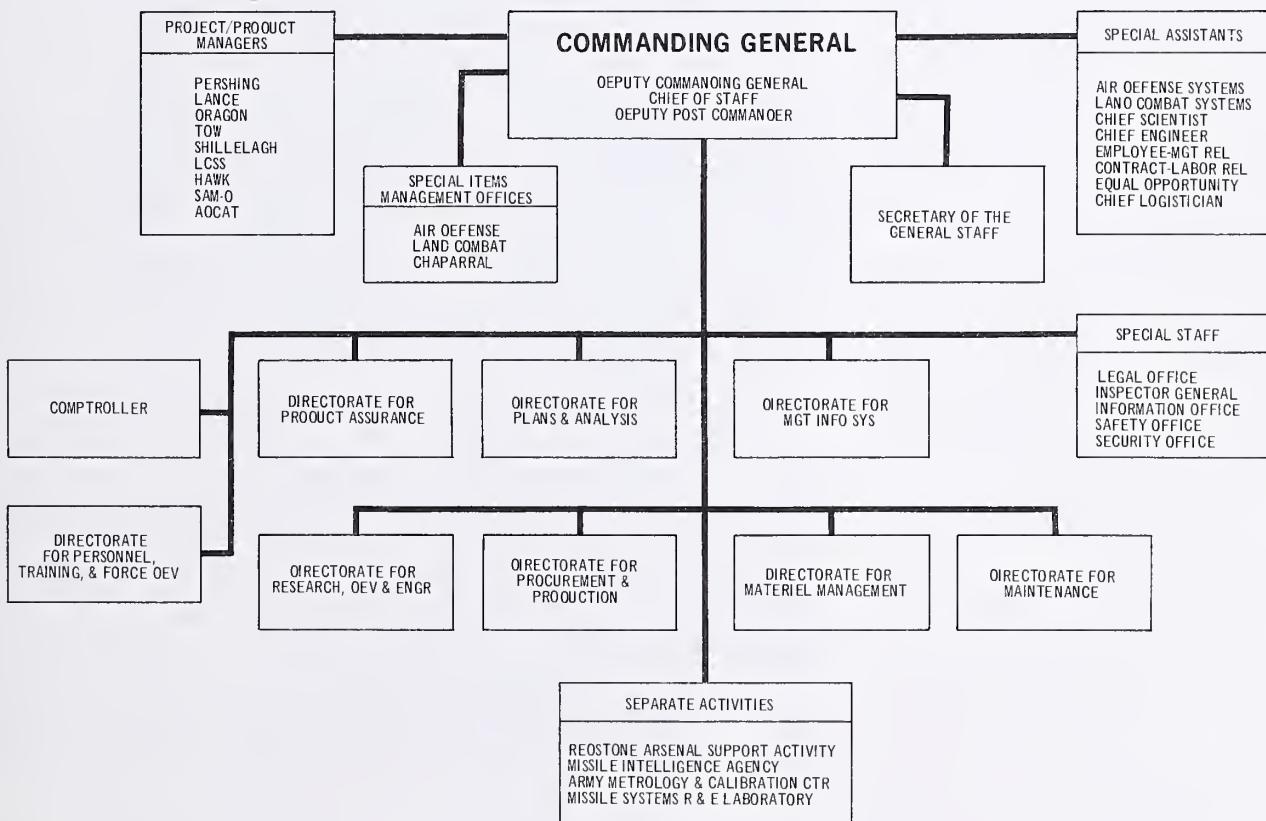
Other offices in the directorate include one for Program Coordination and Support, and the Redstone Scientific Information Center.

The command's research and development laboratories have now been established—largely for administrative purposes—as a separate Class II activity collectively known as the Missile Systems Research and Engineering Laboratory. This element, in turn, has been subdivided into seven major areas, each headed by a civilian director. Functions formerly carried out in two of the Missile Command laboratories, the Ground Support Equipment Laboratory and the Structures and Mechanics Laboratory, were consolidated under the Director of Ground Equipment and Materials. The areas of responsibility of the other directors are evident in their titles and include: aeroballistics, physical sciences, propulsion, advanced sensors, guidance and control, and test and evaluation.

The laboratory operation and its experienced staff represent a technical competence in being that the Missile

## U. S. ARMY MISSILE COMMAND

REDSTONE ARSENAL, ALA. 35809



Command has always felt absolutely essential to the successful accomplishment of its mission. The laboratory group essentially performs three tasks: evolving new technology and adapting it to Army needs; trouble shooting technical problems that may arise in on-going systems; and evaluating the technical proposals and competence of Army missile contractors.

The other command elements listed in the bottom block of the accompanying organization chart are also established as Class II activities and deserve a few words of explanation.

The Army Metrology and Calibration Center has the total Army mission for calibration and metrology, while the Missile Intelligence Agency works directly with higher authority and the intelligence community in analyzing and evaluating foreign missile systems and missile technology.

Support services to all the Army activities located at Redstone Arsenal and in nearby Huntsville are the responsibility of the Redstone Arsenal Support Activity.

Redstone's 38,000 acres provide a home for the Army Missile Command, which alone among AMC's commodity commands enjoys the particular advantage of having all its major activities on one installation, as well as the U. S. Army Missile and Munitions Center and School, and the Marshall Space Flight Center of the National Aeronautics and Space Administration. The Marshall Center, which observed its tenth anniversary in July, is NASA's primary space launch vehicle manager. The center and school, reporting to the U. S. Continental Army Command, annually trains thousands of soldiers in missile and ammunition maintenance.

Also drawing some support from the Missile Command are three Army agencies located in the Huntsville Industrial Park just north of the arsenal. The Safeguard Systems Command, the Safeguard Logistics Command and the Huntsville Division of the Corps of Engineers are all directly involved in the deployment of the Safeguard Ballistic Missile Defense System, which evolved from the Nike air defense systems managed from Redstone by the Missile Com-

mand and its predecessors almost from their inception 25 years ago.

The series of decisions tracing back more than two decades, which sited in the same area all Army activities with primary interest centered in the technology of missiles and rockets, had a sound basis in the logic that close proximity of management and technical teams would provide a beneficial interchange of ideas and technology. Those decisions also transformed an entire area of the Tennessee Valley. The economic impact was massive. Today the Army agencies at Redstone and Huntsville support a payroll of approximately \$180 million. The Marshall Center adds about \$90 million more. The Missile Command, after a reduction in force of more than 1,000 jobs, still offers full time employment to almost 8,000 civilians. Together with the other Army agencies and the Marshall Center, Federal missile and space activities directly employ twice that many. Yet cutbacks in space and defense spending have had major impact in the community. Aerospace contractor employment had dropped by several thousand before the Army civilian cuts began.

### Community Diversifies

Civic leaders in Huntsville and North Alabama have responded to the challenge of declining space and defense spending with a highly successful effort to diversify their industrial base. Forewarned by declining aerospace employment as NASA contracts began to phase out in 1968, Huntsville began an aggressive effort to attract non-aerospace industry.

Last year, although the community lost 2,700 jobs—primarily in aerospace—it added 3,000 new ones in non-aerospace industry for a total gain of about 300.

The Missile Command, which had long urged diversification upon its neighboring civilian community, has not forgotten that lesson as it faces up to a future made uncertain by change. The answer to the obvious question: "How do you diversify a major AMC commodity command?" is that you don't, at least not by product. What you do with the people available and their individual talents, however, provides the key to how the military and civilian personnel of the

Missile Command are responding to the many challenges of 1970.

In a word, you innovate. You look for new missions, get in shape to accept them, and move out smartly when they come along. Further, if you understand the realities of declining defense spending, you find ways to do a better job.

### Search for Better Ways

The search for the better way has been formalized in PROMAP-70, AMC's implementation of the major Army effort now underway to improve the material acquisition process. Tackling its portion, the Missile Command has carried forward some good ideas of the past, added some new ones. Almost all will bear directly on the command's future dealings with industry.

**Fly Before Buy.** The most noteworthy impact of technology on Army missiles in the past decade has been a trend to decreasing size. A decade ago, most Army missile systems were characterized by low density and high individual cost. Technology now at hand has permitted the Army to translate the dreams of the missile pioneers into hardware with a new generation of small, high accuracy tactical warfare weapons, among them the shoulder fired Redeye ground-to-air heat seeker; Shillelagh, fired from a tank gun and automatically guided to the gunner's point of aim; and the wire guided TOW heavy assault weapon which has proven readily adaptable to launch from a ground mount, a variety of vehicles including jeeps and armored personnel carriers, and helicopters. All these small missiles are being procured in large quantity.

A Fly Before Buy demonstration, instituted in the Shillelagh program in follow-on production orders, was required in TOW from the first production buy. Randomly selected missiles, taken from each production lot, are now being fired regularly at a Redstone Arsenal range and must demonstrate acceptable performance before the Government buys that production lot. Industry can expect a similar requirement in future production of relatively low individual cost, high density missile systems.

**Should Cost.** Early this year, AMC

charged the Missile Command with conducting the Army's first Should Cost study, selecting a sole source missile procurement for the pioneering effort. The Missile Command provided several key people on the 26-man government team which conducted a 2-month study with the full cooperation of the contractor. The objective of this technique, new to Army procurement, is to allow the Army to make a realistic evaluation of a contractor's proposal by determining the soundness of his estimated costs. Industry can expect to see it applied in the future on major, sole source, high dollar contracts.

Historically the Army has used the contractor's proposal as the base line for negotiations in coming to terms with him. Government negotiators looked at available price history, allowed for known price variations and negotiated accordingly.

The Should Cost technique differs from that approach in that a careful examination is made of the contractor's management and production

practices and, indeed, anything else in his operation which contributes to the cost of the hardware. The resultant independent estimate of what the procurement should cost is then applied as the baseline for negotiations.

If the study identifies the uneconomical or inefficient practices in the contractor's operation, he is expected to make necessary improvements and cut costs accordingly. There is no intent to set up an idealistic cost by determining what the price tag should be if the items were produced under the most favorable conditions. The Army does seek to eliminate, through the vehicle of the contract, inefficient practices which may have been accepted in the past.

**Production Management Reviews.** Although still evolving, this technique of systematic hard looks at a producer before committing an expensive system to quantity production is a trademark of Missile Command management. Problems that develop once production is underway almost invariably add substantial cost and lost

time. These reviews are one means that has proven effective in surfacing problems and resolving them before metal cutting begins. The technique brought to light some 20 deficiencies that could have caused real trouble on the first major system the Missile Command tried it on. Basically it involves four on-site reviews, by a command team, of the contractor's capability to produce the desired end item within cost and time constraints. The first, while the system is still in development, concentrates on design stability, documentation and configuration control, development and reliability test results, and in general is aimed at determining if the system is ready to proceed to advanced production engineering. A few months after that phase begins, a second review checks progress. A third is made as advanced production engineering is winding up and determines if results fully support the on-coming production program. Finally, early in production but before hardware is produced, a fourth review checks documentation control, plant layout, acquisition of equipment and special tooling, and other areas of interest.

Although the three examples cited apply primarily to major systems contracts, industry and business can also anticipate increased Missile Command effort to make available dollars go further in the procurement of missile repair parts. Missile repair parts expenditures annually average between \$75 and \$100 million, about 15 percent of the total value of contracts awarded by the command. In terms of annual workload, however, they account for almost 75 percent of the 20,000 yearly contract average. There have been recent developments in both the manner in which these items are contracted for and how the Army handles what is produced.

A technique called Accumulative Quantity Requirements Contracting is now a feature of more than 100 active Missile Command repair parts contracts. A bidder is requested to quote unit price on a specified lot for immediate delivery as well as unit prices for additional orders for the same item within two years. Normally the price comes down on succeeding orders. Should his quote be accepted, the bidder is assured any orders for the



A Dragon anti-armor and fortification missile clears its shoulder launcher during early developmental tests.

item for a period of 24 months in addition to his initial order. The Missile Command pays an adjusted price based on the total order over a period of two years.

Suspicious at first, industry now accepts this contract which allows the producer to take advantage of quantity discount in the purchase of his materials. By amortizing his non-recurring costs on the initial quantity ordered, he can then drop his price on the remainder by eliminating recurring set up costs and taking advantage of his increased skill to produce the item. The Army obtains lower costs and avoids the expense of repetitive solicitation and contract award as well as repetitive first article testing which averages about \$200 per test each time it is necessary to qualify the work of a new producer.

First article testing, in turn, is one of three positive checks the Missile Command is using to improve the quality of missile repair parts in the Army supply system. This is in an effort tracing back to 1962, now broadened to include a depot receiving inspection program and a continuing check on materiel already in storage awaiting issue to operational missile units.

Under original practice, once an initially produced item had passed first article inspection, remaining parts in a lot were shipped direct from the manufacturer to an Army depot, packaged for subsequent individual issue to operational missile units. When the command sent teams into the depots to begin checking new parts as they were received from manufacturers, it quickly became apparent that a significant number of parts being received failed to meet quality standards.

The origin and type of defective items uncovered in first article test and in the receiving inspection program provide a starting point for the third part of the program, a check of material already in storage.

Some of the defective items can be repaired on the spot, others must be returned to the producer for reworking or replacement. This still expanding program has an obvious potential for substantial savings, but the real reason the command is pushing hard is to ensure reliable parts feeding into

the supply system as replacements for the field.

None of these steps are particularly new or startling, nor are they panacea for the problems of the day. It is a peculiar feature of most ways that produce positive results that they look, upon close examination, to be little more than applied common sense.

The kind of common sense, for example, that instinctively says one way to find out if a producer of repair parts is going to deliver on time is to ask him. The Missile Command cut late deliveries of repair parts from 35 to less than 5 percent by doing just that. A form letter is sent to each of its suppliers 90 days in advance of the delivery, reminding them of the expected delivery date, asking them to report any problems, and following up promptly. This has proven to be a most useful technique, particularly in dealing with small businesses, many of whom are working on their first government contract, are unfamiliar with the way of doing business and, in a few instances, have difficulty reading drawings.

The innovative, yet common sense approach to the problems of today, has also been applied in charting a course for the development of missile systems to meet future Army requirements.

The Army Missile Plan is a document developed by the command that interested industry will be hearing a great deal about in the next few years. It is used to formulate the command's research, exploratory development and advanced development program. Primary intent of the plan is to key the programs managed by the command laboratories to the requirements of the user. It presents a time phased analysis of the technical areas to be investigated and the resources required to achieve weapons meeting future requirements of the Army.

In its present version, the plan is based on 15 approved or potential weapon requirements and evaluates 70 system design options that might achieve the requirements.

An attempt has been made to assess the relative priority of the requirements and to spell out the component technical tasks that must be accom-

plished before specified new systems can begin a contract definition phase.

Oriented to systems and technology, the plan is based on both the officially approved and the potential future requirements of the Army. It provides system and subsystem options rather than single high risk approaches. Finally the plan places the required systems in a priority listing based on a combination of factors, user priority, technology availability, and the needs for replacement of operational systems.

All in all the plan tells a great deal in a single classified document about where the Army missile program stands, where it hopes to go in the next decade, and the hard tasks that must be accomplished along the way.

Industry may request a copy, establishing a need to know, by addressing the Director of Research, Development and Engineering, U. S. Army Missile Command, Redstone Arsenal, Ala. 35809.

## New Personnel Rescue Technique Being Tested

A technique designed for quick rescue of downed airmen and other personnel is being tested by the Aerospace Medical Research Laboratory (AMRL), Wright-Patterson AFB, Ohio.

Tests to date have used an Army U6A aircraft with 2,000 feet of tubular woven half-inch line to pick up instrumented anthropomorphic dummies. Tow tests of human subjects are expected to begin this fall at El Centro, Calif., in conjunction with man-rating systems using the principles of free-fall and circling lines to retrieve men and equipment.

Additional testing with anthropomorphic dummies will precede the live tow tests at El Centro. The Navy also is working on a similar system, called the Ground Anchor Delivery System, which would employ longer lines and high speed jet aircraft. The Navy and Air Force are cooperating in the ventures and test data from both systems will be used at El Centro.

Testing to date of the Air Force technique, called the Long Line Loiter System, indicates promise according to Colonel John Simons, Chief of AMRL's Flight Environments Branch.



## FROM THE SPEAKERS ROSTRUM

### The Threat

*Excerpt from the address by Hon. John S. Foster, Dir., Defense Research and Engineering, at Air Force Association annual convention symposium on "The Threat," Washington, D.C., Sept. 23, 1970.*

I want to define the term "threat" to include all of the weapons of a potential adversary and his capability to use them against us—that is, a comparison of forces on both sides—and the trends which show what we can expect his capabilities to be in the future.

There are, of course, "threats" from many countries. But the Soviet forces so overshadow those of all other potentially hostile nations that we can logically use the Soviet Union as the one nation against which we must measure our capabilities.

If you make all of these assessments as of today, without any wishful thinking, I am convinced that one comes to two conclusions:

- In the kinds of weapons that count most, both nuclear and non-nuclear, the Soviets are going ahead on quantity.
- On quality, it's a horse-race, with the United States now ahead by a neck, but falling back.

Having made these sweeping generalizations, let's go back now and examine some of the details. I'll start with present strategic capabilities.

In a broad sense, there is still rough strategic parity between ourselves and the Soviets in numbers of offensive weapons. They have more land-based missiles than we—more than 1,300 launchers operational, compared with our 1,054. We have more submarine-based missiles than they—41 U.S. Fleet Ballistic Missile submarines op-

erational, compared with approximately 13 operational Soviet submarines of the Polaris type and at least another 15 under construction or outfitting. We don't know, of course, when they will stop building those submarines or the ICBMs. We, however, stopped adding to both our land-based and submarine strategic missile forces several years ago.

The Soviets are still constructing new land-based missiles. There are now more than 300 of the large SS-9s operational or under construction and their Minuteman-sized SS-11s and SS-13s—more than 800.

They are building new missile-carrying submarines at a rate of about eight a year.

In long-range bombers we continue to lead in numbers—unless you assume that the 700 Soviet medium bombers and tankers would be used on one-way missions.

In strategic defense, there is no parity. The Soviets have long been defense-minded and have today an ABM complex operational around Moscow, as well as many thousands, on the order of 10,000, surface-to-air missiles already deployed.

In non-strategic areas, they are impressively active in the tactical aircraft field. Naval tactical forces are also on the increase, as any recent reading of the papers will reveal. They are operating in the Mediterranean, the Caribbean and briefly in the Gulf of Mexico.

But now, let's look beyond the present and near-term future and attempt to describe the kind of situation we will have in 1975 if present U.S. and Soviet trends continue.

To place the U.S. trends in perspective, I would like to remind you that we now are in the process of reallo-



Dr. John S. Foster Jr.

cating the total resources of Government—local, state, and federal—to place greater emphasis on areas which heretofore have been too much neglected. The effort to reverse the trend towards environmental pollution is but a single example. It may be interesting and surprising to note that national public spending—federal, state and local—is far greater on our non-defense needs—on the "quality of life" as it is often put—than it is on defense. Since 1964, in fact, total public spending on civil programs has increased by the equivalent of two Defense Department budgets.

The growing Gross National Product provides most of the extra money for civil needs, but it has been necessary to provide some of the funds from defense spending. Defense budgets as a consequence have been declining since 1968, and the FY 1971 budget presently before the Congress is, in the words of Secretary of Defense Laird, "rock bottom and bare bones." Yet pressures persist in numerous quarters to shrink the defense budget still further—to direct an even greater share of defense dollars into other channels.

The President's request to Congress this year is about \$72 billion. Al-

though it is hard to determine what a ruble is worth, and parts of the Soviet defense budget are hidden, for equivalent defense activities, the Soviets have increased their spending to the present U.S. ballpark and show no signs of leveling off.

A leveling off for us in the low \$70 billions would result in a gradual decline in our buying power. Inflation and higher military pay eat into the value of each defense dollar.

We are introducing new efficiencies, but they cannot compensate fully for the money reductions we have seen. Our available money is going down; the Soviet Union's is going up. This means that we will be buying fewer new weapons, the Soviets will be buying more.

#### Research, Development

The budget squeeze affects all of our defense efforts, but in our examination today of the long-range threat, it is illuminating to look particularly at one kind of spending—research and development. It is today's research and development that provides tomorrow's weapons—for 1975 and beyond. It also provides a capability to understand early and counter quickly the qualitative weapons improvements on the other side.

The picture here is a sobering one.

The Soviet military research and development effort is presently estimated to be 20 percent greater than ours and is growing at an annual rate of 10 to 13 percent. In contrast, in compliance with our overall budget restrictions, U.S. research and development efforts have leveled off and are now declining.

On the assumption that present trends continue, we can visualize the Soviet threat which we could be facing beyond 1975.

First, strategic offensive weapons.

As I have indicated, they can have a greatly increased number of strategic missiles—both land and sea based. If present trends continue, we should expect the ICBMs which they deploy in 1975 to be about the technological equal of our own. The Strategic Arms Limitation Talks (SALT) can influence numbers of missiles, but without a SALT agreement we could trail in numbers.

You are familiar with the quality improvements in the SS-9 ICBM—the large multiple warheads and the good accuracy which the weapon achieves. You may not be familiar, however, with recent tests on their SS-11 missile, which indicate that it, too, is being improved. From what we know now about tests of new configurations we conclude that there are three versions of the SS-11:

- The original one, with a single re-entry vehicle, and now deployed.
- One with a single re-entry vehicle plus penetration aids.
- One which has three separate re-entry vehicles.

In other words, the SS-11 which has been long on numbers but relatively short on quality now is continuing to grow in numbers and achieving significant improvements in quality.

The submarine-based missile force is also of concern. By 1975 or perhaps even earlier, we should expect to see a Soviet submarine missile force comparable to or surpassing our own. This is a sobering thought.

But offensive missile activity is not the only area where an increased threat will lie. As I noted earlier, the Soviets have always been defense conscious. By 1975, we should see an extension and modernization of the Soviet early warning aircraft force deployed beyond the perimeter of the Soviet Union—with interceptors ready to attack our retaliatory bombers long before they reach the Soviet border.

Also, we expect the large numbers of surface-to-air missiles (SAMs) already deployed to be modernized. If a SALT agreement has not stopped further ABM deployment, we should expect a new generation of Soviet ABM interceptors and sensors. They are now being tested. Further, improvements in automation and other feasible changes may make the SAMs, or a portion thereof, a threat to our missiles as well as to our long-range aircraft.

In summary, in the strategic area, we will face a greater threat in numbers of improved strategic offensive missiles—including missile submarines operating off our shores—and also an improved Soviet defensive network, intended to intercept our retaliating missiles and bombers.

Soviet defenses against our Polaris submarines may also improve, judging from vigorous current Soviet work on antisubmarine warfare techniques and technology. They are conducting extensive antisubmarine exercises in open ocean areas throughout the world. You are probably aware that the Soviet Union has the largest submarine force in the world today. In addition to sheer quantity of submarines, they are also increasing substantially the antisubmarine quality of this force—for instance, through recent additions of several new classes of submarines, including several new, modern high speed attack submarines.

#### New Submarines Expected

A large submarine construction program continues in the Soviet Union, and one can anticipate the appearance of additional new classes of submarines with enhanced antisubmarine and antiship capabilities by 1975.

The Soviets have complemented their submarines with an extensive surface ship construction program that has produced several new classes of antisubmarine ships, including an innovative helicopter cruiser and several classes of heavily armed escorts. They also have acquired an airborne antisubmarine capability through the development of a new helicopter for surface ship escorts, and the introduction of a land-based, antisubmarine airplane with excellent range and payload capabilities. The Soviets have begun to combine these individual forces into an open-ocean capability which they exercised recently in a coordinated worldwide exercise.

Although I can foresee no specific breakthrough which will pose a serious problem to our own submarine missile force, the possibility is always present. You can imagine our difficulties if something of this sort emerged. And bear in mind, the harder one works on antisubmarine research and development, the greater one's chance of success; and the Soviets are working hard!

But the Soviet Union, while bending its energies to the rapid buildup of its strategic systems, has at the same time not neglected its conventional forces.

The Soviet navy has expanded from largely a coastal defense force to one extending Soviet naval power to oceans throughout the world. In the Mediterranean and other ocean areas readily accessible to the Soviet Union, their navy is active and growing. By contrast, our own presently larger Navy is shrinking and, except in the case of aircraft carriers and nuclear submarines, is a force rapidly becoming obsolescent. By 1975, we should expect to face a large, modern and mature Soviet navy.

There have also been marked efforts to upgrade Soviet tactical air and armored forces. For example, although present NATO and Warsaw Pact manpower and aircraft are about equal in number, the Pact has twice as many tanks and more than twice as many artillery and rocket-launcher pieces, and is rapidly improving its tactical aircraft strength.

The Soviet fighter aircraft are increasing in quality while retaining overall numerical superiority. The Soviet approach to research and development for fighter aircraft provides for a steady pace in applying technology to design. Prototypes are produced from competing design bureaus on a regular basis. As a result, the Soviets have flown a new fighter about every 18 months.

In the past we have met and defeated the Soviets' best fighter aircraft. But there is conclusive evidence that the Soviets have corrected those major deficiencies in their fighters which were revealed in past engagements with our present aircraft. A new model of the MIG-21 incorporates improved maneuverability, more staying power in the combat area, higher speed at low altitudes and improved armament.

The Soviet Foxbat is currently in production and is based on a level of technology that is in many respects equal to the best in the United States.

By 1975 we expect to operate new fighter aircraft systems that will provide to us a margin of superiority over the threat. However, current Soviet developments indicate their intent to continue their steady pace of technological progress.

As our experiences in the Middle East and the Far East show, the lesson is clear. The vast nuclear arsenal

of the United States will not deter non-nuclear limited wars. Hence we, and our allies, must not lag in our efforts to be equipped with effective "conventional" weapons as well.

### Leadership Fading

I would like now to come back to the issue of research and development. As you know, one must invest heavily in research and development in order to have weapons to match the enemy's. In the past, the United States has had a comfortable edge in the level of defense research and development effort and in the quality of weapons resulting from that process. Our comparative effort has made us confident that we could meet any Soviet challenge in defense, atomic energy, or space.

But the scientific and technological leadership upon which that confidence has been based is fading. The Soviet Union has now created a national research and development base larger than ours—in manpower and spending—and apparently almost equal to ours in quality.

The nature of research and development is such that the problems of falling behind can be multiplied far beyond the simple difference in levels of effort. That is, research and development not only results in new weapons but it also enables us to understand the shadowy evidence of what the Soviets—and others—are doing. Our advanced work in the past has given us a store of knowledge with which we could understand the significance of new Soviet technical advances, and be ready with an appropriate counter when the advance was translated into a new weapon. But should the Soviets become more advanced than we in some area of technology, they could then jump forward while we wondered what the change was all about.

We used to be the ones who made the jumps. In the future, a dangerously large proportion of the surprises could come from the other side, while we scramble to catch up.

Now, I have not covered the entire gamut of the threat, but I have mentioned enough to give you a message. This message is that the path ahead is not easy and not without risk. The

best sober judgment of our nation today is that the risk for the present is an acceptable balance against our many non-defense needs.

We must, however, be ever more vigilant to ensure that the money we do spend is spent in a manner to give us the greatest overall gain. We must likewise be vigilant so that we can recognize when the risk becomes too great to be acceptable.

There are those, of course, who say that the Soviets will not attack, that we need not respond to the "threat" which I have outlined here and that we can further reduce our defense spending. Direct attacks on the United States certainly are unlikely if we maintain our retaliatory capability; but as incidents in the past decade have shown, nuclear weapons can play an important role in crises and confrontations, without a shot being fired.

In another crisis we cannot afford to be a poor second in strategic nuclear weapons as was the Soviet Union during the Cuban missile crisis. And we have fought against Soviet non-nuclear weapons in third countries, and must be prepared to face them again if American interests are threatened.

I cannot predict the future. I can only say that we arm in order to diminish the risk of war and the risk of losses in crises and wars. The greater the disparity in quality and quantity of arms between the United States and the Soviet Union, the greater that risk will be—since all the foreseeable disparities will not be in our favor.

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### Christmas Mail Schedule

The mailing periods for this year's Christmas mail to servicemen overseas are:

- Surface mail—October 12 to November 7.
- Space available airmail (SAM)—October 19 to November 21.
- Parcel airlift (PAL)—October 26 to November 28.
- Airmail—November 30 to December 12.

Mailing within these dates will help ensure timely delivery to overseas destinations.

# Industrial Security Program

Colonel George A. Zacharias, USA

**T**he targets of the intelligence services of the Soviet Union and its satellites have not changed. They seek to penetrate the most sensitive agencies of our Government. They seek to collect military, scientific, technical, and political information. They seek to obtain information concerning developments in private industry. They attend conventions and conferences, they make reconnaissance trips and tours, and they subscribe to all manner of periodicals and publications. —Testimony of J. Edgar Hoover, Director, Federal Bureau of Investigation, before the House Subcommittee on Appropriations, March 5, 1970.

The above quote best illustrates why we have a Defense Industrial Security Program. The purpose of the program is to protect classified information in the hands of industry. Only trustworthy personnel, with security clearances at the appropriate level and a legitimate "need-to-know," are granted access to such information.

The significance of this program becomes more evident when we refer again to the aforementioned Federal Bureau of Investigation testimony. The Bureau Director reported that, as of February 1, 1970, there were 1,129 official representatives of Communist countries assigned to this country, accompanied by 1,497 dependents. This is an increase of 73 percent since 1964. A high proportion of these people are espionage agents.

## Purpose

The Defense Industrial Security Program is designed to safeguard classified information released to U.S. industry. In addition to the Defense Department (including defense agencies and the military services), 11 other Federal agencies and depart-

ments (User Agencies) use the services and procedures of this program. They are the Departments of State; Treasury; Interior; Agriculture; Commerce; Health, Education and Welfare; Transportation; the National Aeronautics and Space Administration; the Small Business Administration; the National Science Foundation; and the General Services Administration.

The same rules and regulations apply, whether the classified information originates in the Defense Department or in one of the 11 non-defense User Agencies. Uniformity of requirements has resulted in less disruption to industry and a reduction in the cost of administering this one program.

## Industrial Security Policy

The Office of the Assistant Secretary of Defense (Administration), more specifically, the Deputy Assistant Secretary (Security Policy), establishes industrial security policy. The Deputy Director for Contract Administration Services (DCAS), Defense Supply Agency, is charged with administration of the Industrial Security Program. Within DCAS, the Office of Industrial Security is responsible for directing the administration of and providing technical direction to the Defense Industrial Security Program and for publishing the various regulations and manuals implementing industrial security policy.

Day-to-day implementation of the program is assigned to 11 Defense Contract Administration Services Regions (DCASRs) which have been assigned security cognizance of the cleared facilities within their jurisdiction. At the close of the calendar year, there were 13,225 facilities.

During the year 2,248 new facilities were cleared and clearance of 2,375 facilities were administratively terminated—a turnover of 4,623 facilities.

**Classification Management.** The assignment of a classification category is the first essential step in industrial security. Security classification affects the overall cost and the operation of the program. The level of classification assigned affects controls needed to assure safeguarding of the information. A higher classification requires increased protective measures such as more storage, equipment, security guards, personnel to control handling of material, etc. Hence costs increase.

On the other hand under-classification may jeopardize the security of information. Thus, it may be said that classification management is the hub of the many spokes which constitute the wheel of security.

**Central Processing of Clearances.** In March 1965, the Defense Industrial



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Security Clearance Office (DISCO), a field extension of the DCAS Office of Industrial Security, was established at Columbus, Ohio, to process all industrial clearances on a centralized basis. Prior to that time, there were approximately 110 separate clearing activities. This centralized administration has proven to be extremely effective.

DISCO currently processes in excess of 650,000 clearance actions annually. On March 5, 1970, DISCO issued its millionth new clearance.

**Establish Need.** A question frequently posed in the Industrial Security Program is: "How do I apply for a clearance for my firm?" The answer is that an industrial organization cannot "apply" for a clearance. A DOD procuring activity (User Agency) or cleared prime contractor having a procurement need for a firm's product or service must initiate the request to the cognizant security office. Upon receipt of a request, an Industrial Security Representative from the cognizant security office visits the prospective contractor and describes the procedures involved in the clearance process. The representative explains the various forms that must be executed at the facility.

The most important forms are the Security Agreement (DD Form 441) and the Certificate Pertaining to Foreign Affiliation (DD Form 441s). By executing the Security Agreement, the contractor agrees to abide by the provision of the Industrial Security Manual (ISM) for Safeguarding Classified Information (Attachment to DD Form 441).<sup>1</sup>

The required forms are then forwarded to DISCO for investigation of the firm and its management.

In addition to a file check of various national agencies, a facility security clearance requires an extensive inquiry into the management structure of the company to determine if there is foreign ownership, control, or influence. Facilities which are determined to be under foreign ownership,

control, or influence are ineligible for a facility security clearance. The facility clearance also requires a clearance of the firm's owners, officers, directors and executive personnel (OODEPs). Each designated official is required to complete a Personnel Security Questionnaire and to submit a set of fingerprint impressions.

When the investigation is satisfactorily completed, the cognizant security office grants a facility clearance and personnel clearances for its OODEPs. Currently, an average facility security clearance processing action takes approximately 40-55 days for a Secret clearance, and approximately 105-120 days for a Top Secret clearance.

**Employee Clearances.** After a facility is cleared, clearances for employees who require access to classified information in contract performance are necessary. This is accomplished by having those employees complete Personnel Security Questionnaires (including fingerprint impressions). The facility then forwards them directly to DISCO for processing.

At DISCO the screening process begins with a check of the Central Index File (a record of all facilities with clearances, indicating clearance level) to assure that the contractor has a valid facility clearance. Then the task of screening clearance applications moves to the DISCO Processing Division which determines the amount of investigation required. The majority of clearance applications are for the Secret level, which requires a National Agency Check. DISCO requests this check from the Defense National Agency Check Center at Fort Holabird, Md. Should the applicants require access to Top Secret information, Background Investigations are needed. In these latter cases, DISCO apportions the requests for investigation to Army, Navy and Air Force investigative services.

When National Agency Checks or Background Investigations are completed, the findings are screened by the Processing Division. If completely favorable, clearance is automatically issued by the reviewer. If more than minor derogatory information is developed, the case is referred to the Adjudication Division. At this point, standards for a favorable determina-

tion, contained in DOD Directive 5220.6,<sup>2</sup> "Industrial Personnel Security Clearance Program," Dec. 7, 1966, are applied. The standard is that it must be "clearly consistent with the National interest" to issue the clearance.

If a favorable determination cannot be made by the DISCO, the case is forwarded to the Office of the Assistant Secretary of Defense (Administration) for decision. DISCO does not have authority to deny or revoke clearance.

**Emergency Suspension of Clearance.** Authority is vested in the Defense Supply Agency Deputy Director for Contract Administration Services or, in his absence, to the Assistant Deputy Director to suspend an industrial personnel security clearance on an emergency basis. This action is taken only in those exceptional cases when information available indicates that retention of a security clearance constitutes an immediate threat to the national interest.

Emergency suspension actions are normally based on recommendations made by the DISCO or the cognizant security office. This information usually originates from contractor reports of loss, compromise, or suspected compromise. It may also result from a contractor's report concerning espionage, sabotage, or subversive activities at his facility.

From the foregoing description, the personnel security clearance process may appear to be a rather time consuming operation. Actually, the time required by DISCO to handle a favorable case is two days. The first is for reviewing the forms and requesting the necessary investigation. The second comes after completion of the investigation for review of the investigative results and issuance of the clearance. In these cases DISCO follows the "in today—out today" rule. In cases involving adverse or questionable information, the processing time increases on average to three days when a favorable decision can be

<sup>1</sup> Additional copies of the ISM (DOD 5220.22-M) may be purchased for \$2.25 prepaid from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

<sup>2</sup> DOD Directive 5220.6 may be obtained without charge, one copy per request, from the Naval Publications and Forms Center, ATTN: Code 300, 5801 Tabor Ave., Philadelphia, Pa. 19120.

made on available information. More time is consumed when investigations become involved.

Average elapsed times from receipt of requests until clearances are issued are 2 days for transfers, 12 days for conversions (a conversion involves former military or government civilian personnel when their government clearance is converted to an industrial security clearance), 22 days for new Secret clearance, and 65 days for new Top Secret clearances.

The DISCO screening job is made more complex by the omission of essential information on the Personnel Security Questionnaire (PSQ), (e.g., name, complete address, signature, arrest record, mental disorders, etc.), and unacceptable fingerprint impression cards. The DISCO PSQ reject rate for 1969 was 15.5 percent on all clearance requests received. This rate would have been 31.5 percent had not DISCO made phone calls to resolve 16 percent of the cases.

Contractors can lessen deficiencies in requests for clearance forwarded to DISCO by ensuring that employees get clear instructions on completing the section of the questionnaire they accomplish in private and by thorough screening of the application to ensure there are no gaps in the individual's employment history or places of residence.

Benefits of accuracy and completeness in the initial submission of the request are self-evident. It speeds up the process of the clearance at DISCO. The sooner the employee receives clearance, the sooner he can become fully productive on the classified job.

**Contractor-Granted Clearances.** Contractors may grant security clearances to employees who require access to information classified no higher than the Confidential level. A contractor is not authorized to grant interim Confidential clearances. Also, contractor-granted Confidential clearances are not valid for access to restricted data, cryptographic information, communications analysis information, or NATO information, except NATO restricted data.

The contractor's determination for issuing a Confidential clearance is based on:

- Employment record of the em-

ployee.

- Information furnished by employee on DD Form 48-2, "Application and Authorization for Access to Confidential Information (Industrial)."

- Any other information known to the contractor which would indicate that the employee's access to classified information is not consistent with the national interest.

Complete information pertinent to contractor-granted clearances is contained in paragraph 24b of the Industrial Security Manual.

**Standard Practice Procedure.** Initial contacts established by the Industrial Security Representative with an industrial organization set the stage for more than just the clearance action. At this time interpretation and assistance is also given to company management on the requirements for safeguarding classified information contained in the Industrial Security Manual. These requirements involve such matters as security controls, visitor procedures, accountability of documents, security education, etc.

When a contractor receives a facility clearance, he must prepare a written Standard Practice Procedure (SPP). The SPP must contain sufficient detail to place into effect all security controls required by the Security Agreement (DD Form 441) and the Industrial Security Manual. Contents of the SPP will vary depending upon the type of facility and work to be performed. Each SPP must establish emergency procedures, "need-to-know" criteria, and personnel clearance requirements. The SPP will also cover, as applicable, controls for reproducing and handling of classified material, use of badges, storage procedures, visitor control, designation and access control to closed or restricted areas, overseas operations, etc.

When completed, a copy of the SPP must be submitted to the appropriate cognizant security office where it is reviewed for adequacy of conformance to the Security Agreement and the Industrial Security Manual. If inadequate, the contractor is advised of deficiencies so that modification can be made to meet necessary requirements.

**Recurring Security Inspections.** When a facility is cleared, it is then eligible

for classified work. However, physical custody of classified documents or material requires the contractor to have physical safeguarding capability. This encompasses not only adequate, secure storage, but a combination of factors such as adequate procedures for handling the material and cleared personnel.

To assure that the contractor is adequately protecting classified information and to assist him where necessary, his facility is inspected periodically by a DCAS Industrial Security Representative from the cognizant security office. It is during these recurring security inspections that a true determination can be made on how well vital defense information is being protected.

These inspections are more than just cursory "question and answer" sessions. Before he visits an industrial facility, the security representative reviews the contractor's Standard Practice Procedure and the results of previous inspections. At the contractor's plant, he certifies the degree of the facility and personnel clearances. He makes sure that the User Agency, which awarded the contract, furnished the contractor adequate classification guidance for aspects of the contract, e.g., weapon characteristics. On the basis of the Industrial Security Manual, he checks the contractor's security education program; storage facilities; controls for restricted or closed areas; visitor controls; methods of transmitting, recording, reproducing, marking and disposing of classified material; controls exercised over subcontractors, consultants, meetings, and release of information to the public; and various other aspects of the security program.

One of the paramount considerations in the conduct of recurring security inspections is the "eyeball-to-eyeball" contact between the government representative and the contractor. In this environment, maximum opportunity is afforded for communication on all aspects of the Industrial Security Program. Employees, as well as management, have direct contact with a knowledgeable government security official. This enables them to see for themselves that security is a serious concern of their Government, with a resultant motivation factor that

might otherwise be difficult to instill. The opportunity for instruction is unlimited since both parties are directly involved in real life situations.

### Other Aspects of Program

*Loss, Compromise, or Suspected Compromise of Classified Information.* No matter how hard we strive for effective security controls, there are occasions when classified information entrusted to contractors is exposed to loss, compromise, or suspected compromise. Each of these instances is thoroughly investigated by the contractor and a report is furnished to the cognizant security office. If the case appears to constitute a violation of Federal statutes, the cognizant security office refers it to an investigative agency of one of the military departments or to the Federal Bureau of Investigation.

When the situation warrants, immediate action is taken by the cognizant security office to ensure corrective action by the contractor. Depending on the situation, corrective action could involve the revising of the Standard Practice Procedure to expand or clarify necessary controls, special training for employees to stress the necessity for safeguarding classified information, issuing of reprimands, etc.

In addition, the cognizant security office notifies the government activities affected by the loss or compromise of classified information.

*Termination of Clearances.* Contractors may request administrative termination of personnel security clearances that are no longer required. Government-granted clearances and contractor-granted clearances can be administratively terminated for employees who have not had access to classified information for the preceding 18 months, and who will not require access in the foreseeable future.

This action is accomplished by executing DSA Form 683, "Request, for Administrative Termination of Personnel Security Clearance." The form is signed by the contractor security supervisor, a witness, and the employee, and certifies that clearance is no longer required. It also states that recommendation of termination is solely of an administrative nature

and does not reflect adversely on the employee in any manner whatsoever.

In the case of government-granted clearances, the form is forwarded for processing directly to DISCO. In the termination of clearances granted to owners, officers, directors and executive personnel or contractor-granted clearances, the form is forwarded for processing to the appropriate cognizant security office since the original clearance for the OODEPs (on which a facility clearance is based) is processed by the cognizant office.

The objectives of the Defense Industrial Security Program are to deter and, if that fails, detect hostile espionage involving U.S. industry. It is next to impossible to prevent spying by foreign agents. Therefore,

we attempt to deter access through the establishment of a system of personal integrity and physical security until, with passage of time or changes in events, classified information loses its significant value.

These objectives can be achieved through the mutual cooperation of Government and industry. The government's role is to conduct quality security inspections of contractor facilities and to provide an effective security education and training program and industry's role is to ensure that security is given top management support. Together Government and industry form a partnership which has resulted in a highly effective Defense Industrial Security Program.

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## Industrial Security Awards Announced

The 1970 winners of the James S. Cogswell awards for superior performance in carrying out security obligations on classified defense contracts have been announced by the Defense Supply Agency.

Approximately 13,000 industrial firms were considered for the awards.

Outstanding award plaques were presented to: ARO, Inc., Arnold AFS, Tullahoma, Tenn.; LTV Electrosystems, Inc., Greenville, S.C.; Stanford Research Institute, Huntsville, Ala.; Magnavox Co., Fort Wayne, Ind.; Battelle Memorial Institute, Columbus, Ohio; Tracor, Inc., Austin, Tex.; AVC, Inc., Albuquerque, N.M.; Texas Instruments, Inc., Dallas, Tex.; General Dynamics Corp., Fort Worth Division, Fort Worth, Tex.; Raytheon Co., White Sands Missile Range, N.M.; LTV Aerospace Corp., Sterling Heights, Mich.; Planning Research Corp., Los Angeles, Calif.; Gulf General Atomic, Inc., San Diego, Calif.; Aerojet-General Corp., El Monte, Calif.; Grumman Aerospace Corp., Bethpage, N.Y.; Hercules, Inc., Mineral Country, W.Va.; Applied Psychological Services, Inc., Wayne, Pa.; Pacific Telephone and Telegraph Co., San Francisco, Calif.; and Calvin Communications, Inc., Kansas City, Mo.

Certificates of excellence were awarded to: Singer-General Precision,

Inc., Binghampton, N.Y.; Sylvania Electric Products, Inc., Needham Heights, Mass.; Adcom Division of Teledyne, Inc., Cambridge, Mass.; General Motors Corp., Oak Creek, Wis.; General Electric Co., Dayton, Ohio; EG&G, Inc., Albuquerque, N.M.; Western Co. of North America, Richardson, Tex.; Bendix Corp., Madison Heights, Mich.; CCI Aerospace Corp. (doing business as the Marquardt Co.), Van Nuys, Calif.; Litton Systems, Inc., Van Nuys, Calif.; Hudson Institute, Inc., Croton-on-Hudson, N.Y.; Maxson Electronics Corp., Great River, N.Y.; Martin Co., Middle River, Baltimore, Md.; Ordnance Research Laboratory, Pennsylvania State University, University Park, Pa.; United Aircraft Corp., Sunnyvale, Calif.; and Ball Brothers Research Corp., Boulder, Colo.

Factors in selecting the winners included:

- Degree of security consciousness evidenced by management personnel of industrial organizations.
- Security education and motivation program by contractors for employees.
- Regular inspections by contractors of security practices within the organization.
- Security review procedures in company publications and advertising.
- Adaption of new security methods in such areas as reproduction and transmission of documents, control of movement of employees and visitors within plants.

# Small Business Share in Defense Contracts, RDT&E

## Small Business Share of Defense Procurement

(\$000)

Type of Firm and Category of Procurement	Fiscal Year	
	1970 July 69-June 70	1969 July 68-June 69
<b>Defense Procurement (Prime Contracts)</b>		
From All Business Firms—Total	\$31,177,076	\$37,986,280
Missile and Space Systems	4,785,308	5,238,625
Aircraft	6,596,153	8,316,897
Other Major Hard Goods	9,122,517	11,671,965
Services	2,938,036	2,934,176
Commercial Items, Construction and All Purchases		
Under \$10,000	7,749,534	9,169,433
Civil Functions	585,528	655,184
From Small Business Firms—Total	5,491,727	6,765,378
Missile and Space Systems	86,738	94,211
Aircraft	175,698	242,603
Other Major Hard Goods	809,526	1,153,028
Services	580,409	658,294
Commercial Items, Construction and All Purchases		
Under \$10,000	3,601,289	4,367,395
Civil Functions	238,067	249,847
<b>Percentage of Defense Prime Contracts</b>		
To Small Business Firms—Total	17.3%	17.8%
Missile and Space Systems	1.8	1.8
Aircraft	2.7	2.9
Other Major Hard Goods	8.9	9.9
Services	19.8	22.5
Commercial Items, Construction and All Purchases		
Under \$10,000	46.5	47.6
Civil Functions	40.7	38.1
<b>Subcontracts</b>		
Number of Reports from Large Business Firms	934*	946
Subcontract Commitments by Reporting		
Large Business Firms	\$11,930,563*	\$14,883,450
Commitments to Small Business Firms	4,377,994*	6,046,444
Percent to Small Business	36.7	40.6

Table 1

\*Preliminary, Subject to Revision.

## Research, Development, Test and Evaluation

(\$000)

Type of Firm and Department	Fiscal Year	
	1970 July 69-June 70	1969 July 68-June 69
<b>Total</b>	\$4,771,899	\$5,320,090
Army	940,067	1,074,739
Navy	1,556,756	1,393,310
Air Force	2,275,076	2,852,041
<b>Small Firms</b>	189,110	197,583
Army	53,420	60,373
Navy	66,624	80,409
Air Force	70,066	56,801
<b>Other Firms</b>	4,582,789	5,122,507
Army	887,647	1,014,366
Navy	1,490,132	1,312,901
Air Force	1,205,010	2,795,240
<b>Small Firms as a Percent of Total</b>	4.0%	3.7%
Army	5.6	5.6
Navy	4.3	5.8
Air Force	3.1	2.0

Table 2

Note: Statistics contained in Tables 1 and 2 were compiled by the Directorate for Information Operations, Office of the Assistant Secretary of Defense (Comptroller), Washington, D.C. 20301.



## ABOUT PEOPLE

### DEPARTMENT OF DEFENSE

**Louis A. deRosa** is now the Asst. to the Secretary of Defense (Telecommunications), the first appointee to the position. He will be principal staff assistant to the Secretary of Defense for telecommunications matters, and for the National Communications System. He will be responsible for development of DOD telecommunications policy, directives to support policy, and for recommending program/budget policies, plans and procedures as they relate to telecommunications.

**Robert J. Pranger** has been sworn in as Dep. Asst. Secretary of Defense (International Security Affairs) for Policy Plans and NSC Affairs. Replacing him as Dep. Asst. Secretary of Defense (ISA) for Near East and South Asian Affairs is **James H. Noyes**.

**Maj. Gen. William E. Shedd III**, USA, is the new Dep. Dir. of Operations and Administration, Defense Atomic Support Agency, Washington, D.C.

**Rear Adm. Roderick O. Middleton**, USN, has been designated Military Asst. to the Dep. Dir., Research and Engineering (Strategic and Space Systems), Office of the Secretary of Defense. Also within DDR&E, **G. Ronald Wenninger** is the new Asst. Dir. (Tactical Systems Plans and Analysis), and **Dr. Howard L. Yudkin** is now Asst. Dir. (Information and Communications).

**Robert G. Gibson** is the new Research and Engineering Consultant on the staff of the Commander in Chief, Pacific, with primary duty to provide technical information on new military systems and programs related to the Pacific Command.

In the Defense Supply Agency, new assignments include: **Brig. Gen. Louis J. Schelter Jr.**, USA, Commander, Defense Contract Administration Services Region (DCASR), New York, N.Y.; **Col. Forrest R. Dupont**, USAF, Commander, DCASR, St. Louis, Mo.;

**Capt. John W. Lipscomb Jr.**, SC, USN, Commander, DCASR, Atlanta, Ga.; **Col. Harold W. Yount**, USA, Commander, DCASR, Dallas, Tex.; and **Kenneth W. Eppert**, Acting Chief of Contracts Compliance, Contract Administration Services, Hq., Defense Supply Agency, Cameron Station, Alexandria, Va.

### DEPARTMENT OF THE ARMY

**Lt. Gen. John Norton** has been assigned as Asst. Chief of Staff for Force Development, Office of the Chief of Staff of the Army. Replacing Lt. Gen. Norton as Dep. Dir., Project MASSTER (Mobile Army Sensor Systems Test and Review), Fort Hood, Tex., is **Maj. Gen. George P. Seneff Jr.**

**Maj. Gen. Charles T. Horner, Jr.** has been named Chief of Staff, Army Materiel Command, Washington, D.C.

**Col. George W. Connell** is now Commander, Edgewood Arsenal, Md. His new Dep. Commander is **Col. George A. Lynn**.

**Col. Wallace O. Enderle** has taken command of the Army's Electronic Proving Ground, Fort Huachuca, Ariz.

The new commander of the Mobility Equipment and Research and Development Center, Fort Belvoir, Va., is **Col. Bennett L. Lewis**.

**Col. Nelson W. Tobey** is the new head of the Missile Test and Evaluation Directorate, White Sands Missile Range, N.M.

**Col. Douglas G. Younger** is now Commander, Army Institute of Special Studies, Combat Developments Command, Ft. Belvoir, Va.

New assignments in the Army Test and Evaluation Command, Aberdeen Proving Ground, Md., include: **Col. Robert T. O'Brien**, Dir., Electronics Materiel Testing; **Col. John B. Hammond**, Dir. of Logistics; **Col. George T. Morris**, head of the Test Systems Analysis Directorate; **Lt. Col. Richard A. Humes**, Dep. Dir., Electron-

ics Materiel Testing; and **Lt. Col. David B. King II**, Dir., Aviation Materiel Testing.

In the Strategic Communications Command, Fort Huachuca, Ariz., new assignments include: **Col. George W. Adair**, Dep. Commander, Communications Electronics Engineering Installation Agency (CEEIA); **Col. John H. Grady**, Dir., Communications Engineering, CEEIA; and **Col. George B. Jordan**, Dir., Telecommunications Automation Directorate, CEEIA.

### DEPARTMENT OF THE NAVY

New appointees in the Office of Chief of Naval Operations include: **Rear Adm. Charles Becker**, Dir., Materiel; **Rear Adm. Donald D. Engen**, Dir., Strategic Plans and Policy; **Rear Adm. Kenneth L. Woodfin**, Dir. Navy Space Program; **Rear Adm. Roger E. Spreen**, Dir., Navy Information Systems; and **Capt. Robert Y. Kaufman**, Undersea Long Range Missile System Coordinator.

In the Naval Materiel Command, new assignments include: **Rear Adm. Edwin E. McMorries**, Asst. Commander for Contracts, Naval Air Systems Command, Washington, D.C.; **Rear Adm. Kenneth L. Woodfin**, Dir. of Contracts, Naval Ship Systems Command, Washington, D.C.; **Capt. Randolph W. King**, Commander, Naval Ship Research and Development Center, Carderock, Md.; and **Capt. W. A. Walls**, CEC, Commander, Naval Civil Engineering Laboratory, Port Hueneme, Calif.

Recent assignments in Headquarters, U.S. Marine Corps, Washington, D.C., are: **Brig. Gen. R. H. Spanjer**, Dir., Systems Support Group; **Brig. Gen. (selectee) James H. Berge Jr.**, Asst. Dep. Chief of Staff (Air); and **Brig. Gen. (selectee) Wilbur F. Simlik**, Dept. Asst. Chief of Staff, G-4.

**Rear Adm. C. M. Hart**, former Commander, Long Beach Naval Shipyard, Calif., is now Supervisor of

Shipbuilding Conversion and Repair, Newport News, Va. His replacement at Long Beach is Capt. Richard C. Fay.

New assignments in the Ship Parts Control Center, Mechanicsburg, Pa., include: Capt. William M. Oller, Executive Officer; and Capt. H. C. Sharp, Dir., Support Services Group.

## DEPARTMENT OF THE AIR FORCE

Brig. Gen. Lew Allen, Jr. is now the Asst. to the Dir. of Special Projects, Office of the Secretary of the Air Force, located in Los Angeles, Calif.

Brig. Gen. John W. Baer has been designated Dep. Dir. of Operations for Strike Forces, Office of the Dep. Chief of Staff for Plans and Operations, Hq., USAF, Washington, D.C.

New assignments in Air Force Systems Command include: Col. George H. Chronis, Dir., Test Track Division, Air Force Missile Development Center, Holloman AFB, N.M.; Col. Lyle W. Cameron, Dir. of Systems Engineering, Office of the Dep. for Engineering, Aeronautical Systems Division, Wright-Patterson AFB, Ohio, Col. Harry L. Orthman, Asst. Dep. for FY-15/Joint Engine Programs Office, Aeronautical Systems Division, Wright-Patterson AFB, Ohio; and Col. John G. Paulisick, Dep. for Development Planning, Aeronautical Systems Div., Wright-Patterson AFB, Ohio.

Within the Electronic Systems Division, AFSC, L. G. Hanscom Field, Bedford, Mass., assignments include: Col. Gonzalo Fernandez, Dep. Commander for Command and Management Systems; Col. Robert F. Jensen, Dir., Automatic Data Processing Equipment Selection Directorate; Col. Orville J. Kvamme, Dir., Air Weapons Surveillance and Control System Program Office; Col. Robert B. Stewart, Dir., Aerospace Instrumentation Program office; Col. Robert B. Stewart, Asst. Dep. for Airborne Warning and Control System (AWACS); and Lt. Col. George G. Deranian, Dir., Tactical Satellite Communications Program.

Col. Byron L. Schatzley has been named Commander, Aeronautical Chart and Information Center, St. Louis, Mo.

## Selected Acquisition Costs Reported

Costs of 36 major defense weapon system acquisitions have grown \$17,699 million to \$102,331 million, according to the latest Selected Acquisitions Report to Congress. However, the June 30, 1970, report showed decreases in cost growth from reports made in March 1970, and in June 1969 for a slightly different set of acquisitions.

Total cost growth in the June report resulted from a number of changes:

• Engineering	19 percent
• Support	7 percent
• Schedule	14 percent
• Unpredictable	3 percent
• Economic	11 percent
• Estimating	42 percent
• Other	4 percent

### Changes in Cost Growth

	(\$ millions)	
	March 1970 to June 1970	June 1969 to June 1970
Change in Cost Growth	\$ 20,153	\$ 20,109
Reasons for Change	17,699	17,699
Added or Cancelled Systems	65	1,258
Contract Approved, Development		
Estimate Adopted	-1,734	-3,769
Accounting Changes	-1,381	-1,131
Corrections	43	43
Economic Changes	276	356
Engineering, Support Changes	339	829
Other Changes	-62	4

## Cost Estimates for Selected Acquisitions

(\$ millions)

System	Development estimate	Quantity Adjustment	Adjusted development estimate	Other cost growth	June 30, 1970 current estimate
<b>Army</b>					
SAM-D	\$ 3,989	\$-1,791	\$ 2,198	\$+1,216	\$ 3,414
MBT-70	2,091	-602	1,489	+337	1,826
Cheyenne (R&D) only	126	—	126	+76	202
Lance	653	—	653	+108	761
Sheridan	376	-13	363	+93	456
Shillelagh	357	-18	339	+157	496
Safeguard					
Phase I only	4,185	+20	4,205	+389	4,594
Mod. Phase II	1,345	—	1,345	—	1,345
<b>Total Army</b>	<b>\$13,122</b>	<b>\$-2,404</b>	<b>\$10,718</b>	<b>\$+2,376</b>	<b>\$ 13,094</b>
<b>Navy</b>					
A-7E	1,466	-385	1,081	+494	1,575
F-14	6,166	+2,036	8,202	+77	8,279
P-3C	1,294	+971	2,265	+286	2,551
S-3A	2,891	—	2,891	+43	2,934
Condor	441	-221	220	+131	351
Phoenix	677	+216	893	+608	1,501
Poseidon	4,569	-244	4,325	+790	5,115
Sparrow E	741	-460	281	+12	293
Sparrow F (Mod)	454	+114	568	+490	1,058
MK 48 (0/1/2)	714	+489	1,203	+2,554	3,757
SSN-688	1,658*	+2,376	4,034	+246	4,280
DD-968	2,581	+1,596	4,177	—	4,177
DLGN-38	769*	+3,211	3,980	+1,510	5,490
LHA	1,380	—	1,380	+48	1,428
CVAN 68	428*	—	428	+116	544
CVAN 69	519*	—	519	—	519
<b>Total Navy</b>	<b>\$26,748</b>	<b>\$+9,699</b>	<b>\$36,447</b>	<b>\$+7,405</b>	<b>\$43,852</b>
<b>Air Force</b>					
F-111A/C/D/E/F	5,505	-2,581	2,924	+3,457	6,381
FB-111A	1,781	-1,043	738	+469	1,207
C-5A	3,413	-736	2,677	+1,632	4,309
A-7D	1,379	-282	1,097	+303	1,400
B-1	10,108	—	10,108	—	10,108
F-15	7,355	—	7,355	+1	7,356
AWACS	2,663	—	2,662	—	2,662
Maverick	384	-74	310	+34	344
Minuteman II	4,255	+4	4,259	+207	4,466
Minuteman III	4,674	-38	4,636	+999	5,635
SRAM	237	+118	355	+736	1,091
Sparrow E	529	-205	324	+36	360
Sparrow F	12	+10	22	+44	66
<b>Total Air Force</b>	<b>\$42,294</b>	<b>\$-4,827</b>	<b>\$37,467</b>	<b>\$+7,918</b>	<b>\$ 45,385</b>
<b>Totals</b>					
Navy	26,748	+9,699	36,447	+7,405	43,852
Air Force	42,294	-4,827	37,467	+7,918	48,385
Army	13,122	-2,404	10,718	+2,376	13,094
<b>Grand Totals</b>	<b>\$82,164</b>	<b>\$+2,468</b>	<b>\$84,632</b>	<b>\$ 17,699</b>	<b>\$102,331</b>

\*Planning Estimate used—no Development Estimate available

## U.S. Withdraws from Mallard

The Department of Defense has notified the governments of Australia, Canada, and the United Kingdom that the United States has decided to withdraw from the Mallard Project, a four-nation cooperative research and development program for tactical communications.

Dr. John S. Foster Jr., Director of Defense Research and Engineering, explained that although the Mallard had been an extremely productive development whose international character enhanced its ideas and productivity, DOD had not been able to win Congressional support for continued U.S. participation in the program.

The Mallard Project has been a cooperative venture among the four partner nations to share the cost of the research and development of an advanced tactical communication system which would provide the same equipment and standards for the armies and air forces of those nations.

The project began officially in April 1967, and had progressed to the point where pre-prototype models of system components were being constructed to test the feasibility of the selected system design. The joint schedule called for introduction of Mallard standard equipment into the operating forces of the participating nations in 1978.

The United States had spent \$34 million in the cooperative program and \$15 million in unilateral support efforts.

This effort has resulted in a number of products needed in the design of follow-on systems, including a set of detailed design standards for tactical communications and a detailed design for an all digital system.

Dr. Foster indicated to the Mallard partners that the United States plans to conduct an extensive review of its particular requirements for tactical communications during the next year, and would continue to work for compatibility of tactical communications with its former Mallard partners and major NATO nations.

Dr. Foster's remarks were contained in letters addressed to the Chiefs of the Defense Missions in Washington of the three Mallard partners.



# DEFENSE PROCUREMENT

Contracts of \$1,000,000 and over awarded during the month of September 1970.



## DEFENSE SUPPLY AGENCY

8—**Hess Oil and Chemical Corp.**, Woodbridge, N.J., \$1,424,228. Fuel oil and gasoline for delivery to Delaware, Washington, D.C., Indiana, Kentucky, Maryland, Ohio, Tennessee, Virginia, and West Virginia. Defense Fuel Supply Center, Alexandria, Va. DSA 600-70-D-2099.

9—\***Tennessee Overalls Co., Inc.**, Tullahoma, Tenn., \$1,210,302. 389,165 pairs of men's khaki cotton twill trousers. Defense Personnel Support Center, Philadelphia, Pa. DSA 100-71-C-0277.

11—**Jervis B. Webb Co. of Calif.**, Washington, D.C. \$1,096,447. A mechanized material handling system. South Gate, Calif. Defense Construction Supply Center, Columbus, Ohio. DSA 700-71-C-1269.

17—The Defense Personnel Support Center, Philadelphia, Pa., issued the following contracts:  
 \***Marcie Dale, Inc.**, Atlantic City, N.J. \$1,148,264. 78,120 men's green wool serge coats, with belts, for the Marine Corps. DSA 100-71-C-0294.

\***Supreme Manufacturing Co.**, Dallas, N.C. \$1,008,169. 2,000,000 men's white cotton crew neck undershirts. Dallas and Clover, S.C. DSA 100-71-C-0315.

29—\***Delta Petroleum Co., Inc.**, New Orleans, La. \$1,181,214. 2,712,375 gallons of lubricating oils. Defense Fuel Supply Center, Alexandria, Va. DSA 600-71-C-0663 P00001.

30—The Defense Fuel Supply Center, Alexandria, Va., issued the following contracts for fuel oil and gasoline:  
 Standard Oil Co. of Calif., San Francisco, Calif. \$1,457,057. DSA 600-71-D-0499.  
 Armour Oil Co., San Diego, Calif. \$2,326,623. DSA 600-71-D-0465.  
 Mobil Oil Corp., New York, N.Y. \$3,068-978. DSA 600-71-D-0485.  
 Powerine Oil Co., Santa Fe Springs, Calif. \$1,088,382. DSA 600-71-D-0490.  
 Shell Oil Co., New York, N.Y. \$3,936,312. DSA 600-71-D-0490.

## CONTRACT LEGEND

Contract information is listed in the following sequence: Date—\*Small Business Firm—Company—Value—Material or Work to be Performed—Location of Work Performed (if other than company plant) — Contracting Agency — Contract Number.



## DEPARTMENT OF THE ARMY

1—The Army Ammunition Procurement and Supply Agency, Joliet, Ill., issued the following contract modifications for metal bomb fuze parts:  
 Eureka Williams Co., Bloomington, Ill. \$1,113,710. 169,000 parts. DA-AA09-70-C-0329.

Batesville Manufacturing Co., Batesville, Ark. \$1,115,400. 169,000 parts. DA-AA09-70-C-0370.

—The Army Ammunition Procurement and Supply Agency, Joliet, Ill., issued the following contracts for 750-lb bomb metal parts:  
 R. G. LeTourneau, Inc., Longview, Tex. \$11,068,680. 132,000 parts. DA-AA09-71-C-0010.

AMF, Inc., New York, N.Y. \$6,906,960. 72,000 parts. DA-AA09-71-C-0011.

—Raytheon Co., Andover Mass. \$2,816,000 (contract modification). Engineering services for the Improved Hawk missile. Andover and Bedford, Mass., and White Sands Missile Range, N.M. Army Missile Command, Huntsville, Ala. DA-AH01-70-C-0195.

—White Motor Corp., Lansing, Mich. \$1,874,724. Engineering services for the M39 5-ton 6x6 truck. Chicago, Ill. Army Tank Automotive Command, Warren, Mich. DA-AE07-71-C-0027.

—Motorola, Inc., Scottsdale, Ariz. \$2,781,384. Design, fabrication, testing and delivery of one Long Range Positioning Determining System (LRPDS). Army Mobility Equipment Research and Development Center, Fort Belvoir, Va. DA-AK02-71-C-0022.

2—Cooper Bessemer Co., Mt. Vernon, Ohio. \$4,328,768. Diesel engine generators for the Malmstrom ABM Safeguard site. Mt. Vernon and Grove City, Pa. Army Engineer District, Huntsville, Ala. DA-CA87-69-C-0008.

—Raytheon Co., Andover, Mass. \$1,171,769. Technical publications on the Improved Hawk missile system. Army Missile Command, Huntsville, Ala. DA-AH01-71-C-0120.

—The following contracts were issued by the Army Electronics Command, Fort Monmouth, N.J.:  
 IBM, Inc., Owego, N.Y. \$1,500,000. Classified electronics equipment.  
 ITT Gilfillan, Van Nuys, Calif. \$2,500,000. Five Raytac radar systems. DA-AB07-70-C-0176.

3—Varo, Inc., Garland, Tex. \$1,523,843. Receiving and transmitting sets. Army Electronics Command, Fort Monmouth, N.J. DA-AB05-71-C-3705.

4—DeLaval Turbine, Inc., Oakland, Calif. \$1,885,576. Five 1,750 kw diesel generators. Cheyenne Mountain Complex, Colorado Springs, Colo. Army Engineer District, Omaha, Neb. DA-CA45-71-C-0027.

8—Control Data Corp., Honolulu, Hawaii. \$1,688,874. Systems development and modification to MACV civil operations rural development support. Republic of Vietnam. Army Missile Command, Huntsville, Ala. DA-AH01-71-C-0009.

—Tasker Industries, Saugus, Calif. \$1,625,160. 373,600 60mm illuminating projectiles. M83A3. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-71-C-0017.

—AVCO Corp., Charleston, S.C. \$1,764,000. Overhaul and modification of 252 P53-L13/13A turbine engines. Army Aviation Systems Command, St. Louis, Mo. DA-AJ01-69-A-0308.

9—Sperry Rand Corp., St. Paul, Minn. \$1,402,789. Computer time and services for the Safeguard System Evaluation Agency, White Sands Missile Range, N.M. Safeguard Systems Command, Huntsville, Ala. DA-HC60-71-C-0021.

—Hughes Aircraft Co., Culver City, Calif. \$2,150,629. TOW engineering services for 12 months. Army Missile Command, Huntsville, Ala. DA-AH01-71-C-0122.

11—Northrop Corp., Anaheim, Calif. \$2,228,330. 122,000 Flechette warheads. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-71-C-0022.

—The Army Ammunition Procurement and Supply Agency, Joliet, Ill., issued the following contract modifications for metal parts for the M374A1 HE projectile:  
 Chamberlain Manufacturing Corp., Elmhurst, Ill. \$2,386,400. Burlington Army Ammunition Plant, Burlington, N.J. DA-AA09-70-C-0298.

Norris Industries, Inc., Los Angeles, Calif. \$2,405,400. Army Ammunition Plant, Riverbank, Calif. DA-AA09-70-C-0297.

—McDonnell Douglas Astronautics Co., Titusville, Fla. \$3,049,200. Services, engineering and development of the Dragon maintenance set for the Marine Corps. Army Missile Command, Huntsville, Ala. DA-AH01-71-C-0093.

—Consolidated Diesel Electric Co., Old Greenwich, Conn. \$53,428,085. 6,201 1 1/4-ton 6x6 cargo trucks and ambulance trucks. Army Missle Facility, Charlotte, N.C., and Schenectady, N.Y. Army Tank Automotive Command, Warren, Mich. DA-AE07-68-C-2606.

—General Motors Corp., Detroit, Mich. \$12,732,142. 6,201 diesel engines for the M561 truck. Army Tank Automotive Command, Warren, Mich. DA-AE07-68-C-2597.

14—The Army Electronics Command, Fort Monmouth, N.J., awarded the following contracts:  
 AVCO Corp., Cincinnati, Ohio. \$1,544,925. 14 remote control matched channel HF receivers and ancillary items. DA-AB07-71-C-0036.

Page Communications Engineers Inc., Washington, D.C. \$3,077,607. Classified electronic equipment.

15—Sylvania Electric Products, Inc., Buffalo, N.Y. \$4,677,265. 655 VHF/FM radio sets, AN/ARC-114, and 474 radio sets, AN/ARC-115. Army Electronics Command, Fort Monmouth, N.J. DA-AB07-71-C-0029.

16—The Army Missile Command, Huntsville, Ala., awarded the following contracts:  
 Applied Devices Corp., College Point, N.Y. \$1,460,640. Modification kits for Hawk simulators. AN/TPQ-29. DA-AH01-70-C-0070.

Aerojet Solid Propulsion Co., Sacramento, Calif. \$2,287,010. Loading Improved Hawk missile motors. Nimbus, Calif. DA-AH01-71-C-0071.

—J. J. Cook Construction, Inc., Oklahoma City, Okla. \$1,271,278. Construction of a Data Processing Plant addition, Tinker AFB, Okla. Army Engineer District, Fort Worth, Tex. DA-CA63-71-C-0039.

—Algeron Blair, Inc., Montgomery, Ala. \$8,782,653. Construction of an enlisted men's barracks complex, and central heating and cooling plant, Fort Jackson, S.C. Army Engineer District, Savannah, Ga. DA-CA21-71-C-0019.

18—**AVCO Corp.**, Stratford, Conn. \$3,450,000. Modification kits for T-53 gas turbine engines. Charleston, S.C., and Stratford, Army Aviation Systems Command, St. Louis, Mo. DA-AJ01-70-A-0334.

—**G. A. Goodwin Building Contractor, Inc.**, Boulder, Colo. \$1,106,700. Construction of 48- and 52-man officers' quarters buildings, Lowry AFB, Colo. Army Engineer District, Omaha, Neb. DA-CA45-71-C-0033.

—**Phoenix General Construction Co., Inc.**, Dallas, Tex. \$1,353,276. Construction of an addition to a hypersonic test facility, Arnold Engineering Development Center, Tullahoma, Tenn. Army Engineer District, Mobile, Ala. DA-CA01-71-C-0025.

—**Kentron Hawaii, Ltd.**, Honolulu, Hawaii. \$10,981,356 (contract modification). Operation, maintenance and development of Kwajalein Missile Range Technical Facilities for 12 months. Kwajalein, Honolulu, and Huntsville, Ala. Army Safeguard System Command, Huntsville, Ala. DA-HC60-69-C-0003.

—**General Motors Corp.**, Detroit, Mich. \$1,264,349. Diesel engines for fork lift trucks. Army Mobility Equipment Command, St. Louis, Mo. DA-AK01-71-C-1578.

22—**Fred A. Arnold, Inc.**, Los Angeles, Calif. \$1,785,683. Construction of a 160-man officers' quarters building, Mather AFB, Calif. Army Engineer District, Sacramento, Calif. DA-CA05-71-C-0032.

24—**Pace Co.**, Memphis, Tenn. \$3,208,819 (contract modification). White star ground parachute signals, M127A. Memphis and Camden, Ark. Picatinny Arsenal, Dover, N.J. DA-AA21-70-C-0381.

—**NACCO**, San Antonio, Tex. \$2,070,868. Construction of a two-story addition to a training facility, and a three-story dormitory, Lackland AFB, Tex. Army Engineer District, Fort Worth, Tex. DA-CA63-71-C-0043.

25—**Bowen-McLaughlin-York Co.**, York, Pa. \$2,612,550 (contract modification) 24 M107 175mm self-propelled guns and 18 M578 tank recovery vehicles. Army Weapons Command, Rock Island Arsenal, Ill. DA-AF03-70-C-0044.

—**Prime Construction Co., Inc.**, Seattle, Wash. \$1,248,470. Construction of a 1,000 man Army Reserve Center with a 5 bay maintenance shop, Fort Lawton, Seattle, Wash. Army Engineer District, Sacramento, Calif. DA-CA05-71-C-0033.

—**Carney General Contractor, Inc.**, Highland Park, Ill., and **\*Metropolitan Construction Co.**, Kansas City, Mo. (joint venture). \$1,661,917. Construction of recreational facilities, Rend Lake, Franklin County, Ill. Army Engineer District, St. Louis, Mo. DA-CW43-71-C-0034.

—**National Presto Industries, Inc.**, Eau Claire, Wis. \$16,996,566 (contract modification). Metal parts for 105mm high explosive projectiles, M1. Army Ammunition Procurement and Supply Agency, Joliet, Ill. DA-AA09-69-C-0028.

28—**Computer Sciences Corp.**, Los Angeles, Calif. \$1,176,428. Automatic data processing services for the Logistics ADP system in Vietnam and Thailand. Assistant Chief of Staff, G-4, USA, Hawaii. DA-GA01-70-C-0067.

30—**Martin Marietta Corp.**, Orlando, Fla. \$2,789,956. Modification kit installation and modified equipment training for the Pershing missile system. DA-AH01-71-C-0185. \$10,274,557. Industrial engineering services for the Pershing missile system. DA-AH01-71-C-0127. Army Missile Command, Huntsville, Ala.

—The Army Ammunition Procurement and Supply Agency, Joliet, Ill., awarded the following contracts:

**Stewart Warner Corp.**, Indianapolis, Ind. \$1,990,900. Metal parts for M148 adapter boosters. DA-AA09-71-C-0060.

**Sperry Rand Corp.**, New York, N.Y. \$3,756,202 (contract modification). Loading, assembling and packing 155mm projectiles, demolition charges and 57mm smoke cartridges. Army Ammunition Plant, Shreveport, La. DA-11-173-AMC-0080(A).

**Thiokol Chemical Corp.**, Bristol, Pa. \$1,637,434 (contract modification). Loading, assembling and packing 40mm and 81mm cartridges, and M125A1 signals. Longhorn Army Ammunition Plant, Marshall, Tex. DA-11-173-AMC-00200(A).

**Uniroyal, Inc.**, New York, N.Y. \$2,827,852 (contract modification). Operation and maintenance of government owned TNT manufacturing facility, Army Ammunition Plant, Joliet, Ill. DA-11-173-AMC-00062(A).

**Hercules, Inc.**, Wilmington, Del. \$6,513,328 (contract modification). Operation and maintenance of government owned propellant production facility, Army Ammunition Plant, Radford, Va. DA-11-173-AMC-00037(A).

—The Army Engineer District, Fort Worth, Tex., awarded the following contracts:

**C. H. Leavell and Co.**, El Paso, Tex. \$7,933,470. Construction of two recruit training and housing facility buildings, Lackland AFB, Tex. DA-CA63-71-C-0053.

**Herman Smith and Co.**, Fort Worth, Tex. \$3,016,000. Construction of a three-story masonry dormitory, with single story administration area, and adjoining

dining hall and kitchen, Sheppard AFB, Tex. DA-CA63-71-C-0054.

\***Beckman Construction Co.**, Fort Worth, Tex. \$1,799,121. Masonry constructed chapel, gymnasium, brigade headquarters, branch exchange and dispensary, Fort Hood, Tex. DA-CA63-71-C-0055.

—**Norris Industries, Inc.**, Los Angeles, Calif. \$5,107,200. 2.75 inch rocket tubes. Picatinny Arsenal, Dover, N.J. DA-AA21-71-C-0142.

—**TRW, Inc.**, Redondo Beach, Calif. \$5,000,000. Classified electronics research and development. Army Electronics Command, Fort Monmouth, N.J.

—**Uniroyal, Inc.**, Detroit, Mich. \$1,193,639. Pneumatic tires for 2 1/2 and 5 ton trucks. Army Tank Automotive Command, Warren, Mich. DA-AE07-71-C-1461.

—**General Motors Corp.**, Indianapolis, Ind. \$3,489,074 (contract modification). Production and engineering services for the M551 Sheridan vehicle. Cleveland, Ohio. Army Weapons Command, Rock Island, Ill. DA-33-019-AMC-00248(W).

—**American Dredging Co.**, Philadelphia, Pa. \$1,027,593. Channel dredging on the Arkansas River, LeFlore and Sequoyah Counties, Okla. Army Engineer District, Tulsa, Okla. DA-CW56-71-C-0036.

—**Will Construction Co., Inc.**, Seattle, Wash. \$4,083,000. Modification and height extension of 20 spillway gates, and 10 new hoists for remote control operation, Bonneville Dam, Multnomah County, Ore. Army Engineer District, Portland, Ore. DA-CW57-71-C-0030.

—**Western Electric Co.**, New York, N.Y. \$7,560,000 (contract modification). Kwajalein Missile Range measurements and radar data collection. Bell Telephone Labs, Whipppany, N.J.; RCA, Moorestown, N.J.; WE Co.; and other subcontractors. DA-HC60-69-C-0001. \$1,995,000 (contract modification). Advanced ballistic missile defense studies in systems and technology. Bell Telephone Labs, Whipppany, N.J.; Cornell Aeronautical Labs, Buffalo, N.Y.; WE Co.; and other subcontractors. DA-HC60-69-C-0008. \$205,300,831 (contract modification). Production requirements for the approved Phase I program for 90 days. WE Co., New York, N.Y., Allentown, Pa., Burlington, Winston-Salem and Greensboro, N.C.; Bell Telephone Labs, Whippanny, N.J.; GE Co., Syracuse, N.Y., and Huntsville, Ala.; Raytheon Co., Bedford, Mass.; McDonnell Douglas Corp., Santa Monica, Calif.; Martin Marietta Corp., Orlando, Fla.; Motorola, Inc., Phoenix, Ariz.; Texas Instruments, Dallas, Tex.; and other subcontractors. DA-HC60-68-C-0017. Safeguard System Command, Huntsville, Ala.



## DEPARTMENT OF THE NAVY

1—**Meredith Construction Co., Inc.**, Norfolk, Va. \$1,269,898. 48 family housing units, Armed Forces Staff College, Norfolk, Va. Atlantic Division, Naval Facilities Engineering Command, Norfolk, Va. N62470-70-C-0819.

—**Atlantic Research Corp.**, Costa Mesa, Calif. \$2,388,217. 48 Mk 35 target boats. Naval Ship Systems Command, Washington, D.C. N00024-71-C-0231.

2—**Westinghouse Electric Corp.**, Mifflin Borough, Pa. \$29,796,728. Nuclear propulsion research and development. Naval Ship Systems Command, Washington, D.C. N00024-70-C-5028.

3—**Interstate Electronics Corp.**, Anaheim, Calif. \$8,571,000. Test instrumentation for the Poseidon fleet ballistic missile. Naval Strategic Systems Project Office, Washington, D.C. N00030-69-C-0209.

—**United Aircraft Corp.**, East Hartford, Conn. \$4,004,963. Development of the TF-30-P412 engine for the F-14 aircraft. Naval Air Systems Command, Washington, D.C. N00019-69-C-0393.

—**Applied Physics Laboratory, Johns Hopkins University**, Silver Spring, Md. \$1,132,275. Increased level of effort for research and development studies. Naval Ordnance Systems Command, Washington, D.C. N00017-62-C-0604.

—**Franchi Brothers Construction Corp.**, Auburn, Mass. \$2,186,000. Construction of a professional education center, Naval War College, Newport, R.I. Naval Facilities Engineering Command, Washington, D.C. N62464-69-C-0191.

—**General Dynamics Corp.**, Groton, Conn. \$2,999,400. Nuclear-powered attack submarine concept formulation studies. Naval Ship Systems Command, Washington, D.C. N00024-70-C-0308.

—**Bendix Corp.**, Teterboro, N.J. \$3,750,000. Automatic flight control system components for A-4 and TA-4F aircraft. Teterboro and Hollywood, Calif. Naval Aviation Supply Office, Philadelphia, Pa. N00383-69-A-0004-0393.

4—**Yakish Builders, Inc.**, and **Construcciones Werl, Inc.** (joint venture), Atlanta, Ga. \$2,913,044. Construction of quarters, Naval Station, Roosevelt Roads, P.R. N62470-70-C-1195.

—**LTV Aerospace Corp.**, Dallas, Texas. \$1,000,000. Increase limitation of government liability for A-7E avionics/VAST program

sets, program design and assurance plan. Naval Air Systems Command, Washington, D.C. N00019-69-C-0536.

8—**General Dynamics Corp.**, Groton, Conn. \$8,750,900 (contract modification). Engineering and design services to support non-nuclear alterations and related work for USS Benjamin Franklin (SSBN-640) class submarines. Naval Ship Systems Command, Washington, D.C. N00024-69-C-0271 PZ0005.

—**Sperry Rand Corp.**, St. Paul, Minn. \$1,509,340. 12 keyset control computers, peripheral equipment, data and engineering services for the Naval Tactical Data System (NTDS). Naval Ship Systems Command, Washington, D.C. N00024-71-C-1029.

9—**Lockheed Missiles and Space Co.**, Sunnyvale, Calif. \$1,928,605. Advanced Poseidon missile system engineering and preliminary engineering studies for the Undersea Long Range Missile System. Naval Strategic Systems Project Office, Washington, D.C. N00030-71-C-0081.

—**Sperry Systems Management Division, Sperry Rand Corp.**, Syosset, N.Y. \$10,812,000. 71,600 man-days technical assistance for the Polaris/Poseidon inertial navigation program. Naval Ship Systems Command, Washington, D.C. N00024-71-C-0509.

10—**North American Rockwell Corp.**, Columbus, Ohio. \$1,200,000. Long lead time items in support of OV-10C aircraft. Naval Air Systems Command, Washington, D.C. N00019-69-C-0696.

—United Aircraft Corp., East Hartford, Conn. \$17,619,190. J-52-P-408, J-52 P-8B and TF30-P-412 engines. Naval Air Systems Command, Washington, D.C. N00019-70-C-0208.

11—Newport News Shipbuilding and Dry Dock Co., Newport News, Va. \$638,400,000 (contract modification). Construction of USS Nimitz (CVAN 68) and USS Dwight D. Eisenhower (CVAN 69). Naval Ship Systems Command, Washington, D.C. N00024-67-C-0325 PZ0041.

14—Walsh and Co., Anchorage, Alaska. \$3-649,206. 100 family housing units. Naval Station, Adak, Alaska. Naval Facilities Engineering Command, Washington, D.C. N62476-70-C-0038.

—Westinghouse Electric Corp., Baltimore, Md. \$1,817,000. Continuing development support for the design, development, test and evaluation of proposed modification to the Mk 48 torpedo. Lansdowne, Md. Naval Ordnance Systems Command, Washington, D.C. N00017-70-C-1216.

15—Westinghouse Electric Corp., Washington, D.C. \$1,500,000. FY 1971 funding increment for design and development of launching and handling equipment for Poseidon missiles. Naval Strategic Systems Project Office, Washington, D.C. N00030-66-C-0199.

—The Naval Air Systems Command, Washington, D.C., issued the following contracts:

- The Boeing Co., Philadelphia, Pa. \$1-524,000. Services and materials for progressive aircraft rework on CH-46F helicopters. N00019-71-C-0086.
- General Time Corp., Skokie, Ill. \$1,505,-336. Mk 339 Mod 0 mechanical time fuzes, plus shipping and storage containers. N00019-70-C-0141.
- Sparton Corp., Jackson, Mich. \$1,599,-191. AN/SSQ-47B sonobuoys and refurbishing kits. DeLeon Springs, Fla. N00019-70-C-0465.

16—Newport News Shipbuilding and Dry Dock Co., Newport News, Va. \$2,428,690 (contract modification). Planning, scheduling and design work for the nuclear-powered guided missile frigate, DLGN-38. Naval Ship Systems Command, Washington, D.C. N00024-70-C-0252 P00002.

17—Corbin Construction Co., Inc., Dunn, N.C. \$1,771,147. Construction of a water treatment plant, wells and distribution system, Camp Lejeune Marine Corps Base, N.C. Naval Facilities Engineering Command, Washington, D.C. N62470-70-C-0939.

—The Naval Air Systems Command, Washington, D.C., awarded the following contracts:

- Raytheon Co., Bedford, Mass. \$3,969,971. Guidance and control sections for Sparrow III missiles. Lowell and Bedford, Mass., Bristol, Tenn., and Oxnard, Calif. N00019-71-C-0024.
- Grumman Aerospace Corp., Bethpage, N.Y. \$14,000,000. Modification of E-2A aircraft to E-2A/APS-111 configuration. N00019-68-C-0542.
- Interstate Electronics Corp., Anaheim, Calif. \$4,760,000. Field engineering services in support of fleet ballistic missile test instrumentation. Naval Strategic Systems Project Office, Washington, D.C. N00030-71-D-0065.
- Grumman Aerospace Corp., Bethpage, N.Y. \$4,000,000. Long lead-time items for the EA-6B aircraft. Naval Air Systems Command, Washington, D.C. N00019-70-C-0458.
- North American Rockwell Corp., Columbus, Ohio. \$1,539,243. Services and materials to modify existing OV-10 aircraft to YOV-10D night observation gunship (NOGS) configuration. Navy Regional Procurement Office, Los Angeles, Calif. N00123-70-C-2027.
- Johns Hopkins University, Silver Spring, Md. \$1,443,100. Increase the level of effort for research and development studies. Naval Ordnance Systems Command, Washington, D.C. N00017-62-C-0604.
- 21—Honeywell, Inc., Minneapolis, Minn. \$13,-393,991. Rockeye II weapon systems. Naval Air Systems Command, Washington, D.C. N00019-70-C-0140.
- Kaman Corp., Bloomfield, Conn. \$2,185,215. H-2 aircraft main rotary blades. Bloomfield and Moosup, Conn. Naval Aviation Supply Office, Philadelphia, Pa. N00383-70-A-0101-0097.
- 22—Ryan Aeronautical Co., San Diego, Calif. \$4,141,500. BQM-34E aerial targets for the Navy and Air Force. Naval Air Systems Command, Washington, D.C. N00019-69-C-0693.
- Raytheon Co., South Lowell, Mass. \$3,592,-187. Guidance and control sections for Sidewinder missiles. Naval Air Systems Command, Washington, D.C. N00019-70-C-0269.
- FMC Corp., San Jose, Calif. \$21,828,530. 262 assault amphibious landing craft (LVTP-7). Naval Ship Systems Command, Washington, D.C. N00024-70-C-0281 P00003.
- 23—United Aircraft Corp., East Hartford, Conn. \$23,363,040. TF30-P-100 engines for the Air Force. Naval Air Systems Command, Washington, D.C. N00019-70-C-0208.
- Newport News Shipbuilding and Dry Dock Co., Newport News, Va. \$9,326,000. Long lead-time materials for the nuclear submarine SSN-688. Naval Ship Systems Command, Washington, D.C. N00024-70-C-0269 P00009.
- 24—Interstate Electronics Corp., Anaheim, Calif. \$4,999,990 (contract modification). Test instrumentation for Poseidon missiles. Naval Strategic Systems Project Office, Washington, D.C. N00030-70-C-0084.
- 25—Shafer and Miller, Inc., South Miami, Fla. \$3,056,000. Construction of an Environ-
- mental Science Services Administration, Atlantic, Oceanographic Laboratory, Virginia Key, Fla. Naval Facilities Engineering Command, Washington, D.C. N62467-68-C-0031.
- 28—Western Electric Co., New York, N.Y. \$19,524,841. Oceanographic research. Bell Telephone Laboratories, Whippany, N.J. Naval Electronic Systems Command, Washington, D.C. N00039-71-C-0307.
- 29—The Naval Facilities Engineering Command, Washington, D.C., issued the following contracts:

  - Dawson Construction Co., Inc., Gadsden, Ala. \$1,225,973. Construction of an academic building addition, NAS, Pensacola, Fla. N62467-67-C-0597.
  - G. L. Cory, Inc., San Diego, Calif. \$12,-619,133. Construction of an aircraft accessories overhaul shop, NAS, North Island, Calif. N62474-71-C-4025.
  - Westinghouse Electric Corp., Baltimore, Md. \$4,503,000. Increase the scope of work on the Mk 48 Mod 0 fire control interface with production prototype torpedo hardware. Lansdowne, Md. Naval Ordnance Systems Command, Washington, D.C. N00017-70-C-1212.
  - The Naval Air Systems Command, Washington, D.C., issued the following contracts:

    - Lockheed Aircraft Corp., Ontario, Calif. \$1,943,012. Rework and modification of EC-121 aircraft. N00019-71-C-0120.
    - Grumman Aerospace Corp., Bethpage, N.Y. \$1,500,000. Building maintenance at the Naval Weapons Industrial Reserve Plant, Bethpage. N00019-70-C-9023.
    - Automated Terminal Services, Inc., Jamaica, N.Y. \$2,616,900. Operation of Quick-Trans airfreight terminals. Navy Purchasing Office, Washington, D.C. N00060-71-C-0259.
    - 30—Johns Hopkins University, Silver Spring, Md. \$10,218,950 (contract modifications). Research and development studies. Naval Ordnance Systems Command, Washington, D.C. N00017-62-C-0604 Mods P101 and P102.
    - General Electric Co., Phoenix, Ariz. \$1,-419,826. GE-635 electronic data processing system for the U.S. Naval Academy. Naval Automatic Data Processing Equipment Selection Office, Washington, D.C. N66032-71-C-0006.
    - General Electric Co., Washington, D.C. \$10,489,703. Operational engineering support services for fire control and guidance support equipment for Polaris and Poseidon fleet ballistic missiles. Pittsfield, Mass. Naval Strategic Systems Project Office, Washington, D.C. N00030-71-C-0106.
    - North American Rockwell Corp., Columbus, Ohio. \$17,661,600. T-2C aircraft. Naval Air Systems Command, Washington, D.C. N00019-70-C-0144.



## DEPARTMENT OF THE AIR FORCE

1—Lockheed Aircraft Corp., Marietta, Ga. \$7,017,462. C-5A spare parts. Detachment 31, San Antonio Air Materiel Area, AFLC, Marietta, Ga. AF33(657)-15053.

—AiResearch Manufacturing Co., Phoenix, Ariz. \$2,631,202. Gas turbine engines and related technical data. San Antonio Air Materiel Area, AFLC, Kelly AFB, Tex. F41608-70-D-1401.

—The Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio, issued the following contracts:

- The Boeing Co., Seattle, Wash. \$5,500,-000. Research and development of a short range attack missile (SRAMO).

AF33(657)-16584.

Admiral Systems Corp., Chicago, Ill. \$1,-551,340. Electronic airborne test equipment for various aircraft communication system. F33657-71-C-0175.

2—ITT Technical Services, Inc., Paramus, N.J. \$1,044,910. Operation and maintenance of AF Plant 42, Palmdale, Calif. Air Force Flight Test Center, Edwards AFB, Calif. F04611-71-C-0002.

—LTV Electrosystems, Inc., Greenville, Tex. \$1,494,372. Supplies and services for repair and modification of F-101 aircraft subsystems. Greenville, S.C. Ogden Air Materiel Area, AFLC, Hill AFB, Utah. F41608-70-A-4015.

3—Fairchild Camera and Instrument Corp., Long Island, N.Y. \$3,356,983. Aerial strike cameras and related components. Syosset, N.Y. Aeronautical Systems Division, AFLC, Wright-Patterson AFB, Ohio. F33657-69-C-1318.

4—Texas Instruments, Inc., Austin, Texas. \$3,285,778. Aircraft instrument landing systems, spare parts and related ground equipment. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-71-C-0103.

8—General Electric Co., Cincinnati, Ohio. \$2,927,600. J-79 engines, spare parts and aerospace ground equipment. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-69-C-0545.

—General Electric Co., West Lynn, Mass. \$1,200,000. Improvement of aircraft engine components. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0545.

—North American Rockwell Corp., Anaheim, Calif. \$20,750,000. Retrofit kits to update the Minuteman III weapon system. Space

Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-69-C-1285.

—Lockheed Aircraft Corp., Marietta, Ga. \$5,023,847. C-5A aircraft spare parts. Detachment 31, Sacramento Air Materiel Area, AFLC, Marietta, Ga. AF33(657)-15053.

9—North American Rockwell Corp., Anaheim, Calif. \$4,656,920. Maintenance and repair of Minuteman III guidance and control equipment. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-70-C-0173.

10—Lloyd Wood Construction Co., Inc., Tuscaloosa, Ala. \$5,196,112. 300 family housing units. Eglin AFB, Fla. F08651-71-C-0098.

11—Sierra Research Corp., Buffalo, N.Y. \$2,-879,850. Aerospace ground equipment applicable to airborne navigational aids. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-69-C-70396.

—General Electric Co., West Lynn, Mass. \$1,200,000. Improvement of aircraft engine components. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-70-C-0545.

—North American Rockwell Corp., Anaheim, Calif. \$20,750,000. Retrofit kits to update the Minuteman III weapon system. Space

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and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-71-C-0007.

—Motorola Inc., Scottsdale, Ariz. \$7,086,400. Munition proximity fuzes. Armament Development and Test Center, Eglin AFB, Fla. F08638-71-C-0017.

14—Hughes Aircraft Co., Culver City, Calif. \$2,900,000. Engineering services to design and develop a digital automatic flight control system for the F-106 aircraft. San Antonio Air Materiel Area, AFLC, Kelly AFB, Texas. F04606-70-A-0126.

—The Boeing Co., Seattle, Wash. \$5,500,000. Design, development, integrated test operations and evaluations for Minuteman missiles. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-70-C-0137.

15—ITT Research Institute, Chicago, Ill. \$4,880,575. Operation of electromagnetic compatibility analysis center, Annapolis, Md. Electronic Systems Division, AFSC, L.G. Hanscom Field, Mass. F19628-70-C-0291.

—Jet Electronics and Technology, Inc., Grand Rapids, Mich. \$1,131,600. Attitude indicators for the F-4 and RF-4 aircrafts. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-71-C-0274.

16—The Ogden Air Materiel Area, AFLC, Hill AFB, Utah, issued the following contracts:

- \*Dell Industries, Waycross, Ga. \$1,058,-840. Air munitions. F42600-71-C-1131.
- Honeywell, Inc., Hopkins, Minn. \$1,640,-625. Air munition components. St. Louis Park, Minn. F42600-71-C-1163.
- Gibbs Die Casting Aluminum Corp., Henderson, Ky. \$1,402,790. Component parts for air munitions. F42600-71-C-1162.

17—Analytical Services, Inc., Falls Church, Va. \$1,136,148. Analytical studies on the application of a weapon system. Office of Scientific Research, AFSC, Arlington, Va. F44620-69-C-0014.

21—The Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio, issued the following contracts:

- General Dynamics Corp., Fort Worth, Tex. \$142,814,000. F-111 aircraft, spare parts, ground equipment, data and engineering services. F33657-70-C-1130.
- General Electric Co., West Lynn, Mass. \$1,223,334. Turbojet engines and related spare parts. F33657-70-C-0229.

—The Space and Missile Systems Organization, AFSC, Los Angeles, Calif., awarded the following contracts:

- AVCO Corp., Wilmington, Mass. \$1,120,-000. Design and flight testing of reentry vehicles in support of the anti-ballistic missile defense program. F04701-68-C-0278.

Philco-Ford Co., Palo Alto, Calif. \$2,-275,125. Electronic equipment. F04701-70-C-0253.

22—Philco-Ford Corp., Newport Beach, Calif. \$29,862,000. Guidance and control units for air intercept missiles. Anaheim, Calif., and Philadelphia, Pa. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga. F09603-71-C-0167.

23—Sylvania Electronic Systems, Needham Heights, Mass. \$1,471,040 (contract modification). Portable radio spare parts. Directorate of Materiel Management, Kelly AFB, Tex. F33657-70-C-0495.

—Philco-Ford Corp., Philadelphia, Pa. \$2,-182,500. Equipment for overhaul of the AIM-9B, D and E missile. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. F33657-71-C-0127.

—Aerodex, Inc., Miami, Fla. \$1,342,234 (contract modification). Overhaul of T-56 aircraft engines. San Antonio Air Materiel Area, AFLC, Kelly AFB, Tex. F4601-69-D-3989.

—General Electric Co., Arkansas City, Kan. \$1,628,537. Overhaul of J-35 engines and components. Directorate of Materiel Management, Kelly AFB, Tex. F41608-71-D-0144.

24—The Space and Missile Systems Organization, AFSC, Los Angeles, Calif., awarded the following contracts:

- North American Rockwell Corp., Anaheim, Calif. \$2,459,036. Minuteman III post boost propulsion subsystems. F04701-68-C-0280.
- TRW, Inc., Redondo Beach, Calif. \$1,-154,330. Technical services for Minuteman II and III propulsion systems. F04701-70-C-0301.

—Hayes International Corp., Birmingham, Ala. \$2,623,329. Inspection and repair as necessary (IRAN) of KC-97 aircraft. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F34601-70-C-3379.

—Emerson Electric Co., St. Louis, Mo. \$2,-976,440. Electronic equipment for testing the C-141 aircraft's all weather landing systems. Warner Robins Air Materiel Area, AFLC, Robins AFB, Ga. F09603-71-C-0112.

—The Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio, issued the following contracts:

- General Dynamics Corp., Fort Worth, Tex. \$7,550,100. F-111 aircraft AF33 (657)-13403.
- Hughes Aircraft Co., Tucson, Ariz. \$1,-350,014. Rehabilitation of AF Plant No. 44. F33657-70-C-0805.

25—Lockheed Aircraft Corp., Marietta, Ga. \$6,-648,780. C-5A spare parts. Detachment 31, San Antonio Air Materiel Area, AFLC, Marietta, Ga. AF33 (657)-15053.

—J. J. Cook Construction, Inc., Oklahoma City, Okla. \$2,074,000. Construction of 100 family housing units, Tinker AFB, Okla. Oklahoma City Air Materiel Area, AFLC, Tinker AFB, Okla. F34650-71-C-10125.

—Lockheed Aircraft Corp., Marietta, Ga. \$1,-606,427. Modification of C-141 aircraft. Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio. AF33 (657)-8835.

28—The Ogden Air Materiel Area; AFLC, Hill AFB, Utah, awarded the following contracts:

- Sargent-Fletcher Co., El Monte, Calif. \$1,570,920. 750-pound bombs. F42600-71-C-1180.
- LTV Electrosystems Inc., Greenville, Tex. \$2,337,127. Supplies and services for inspection and repair as necessary (IRAN) of F-101B aircraft. Greenville, S.C. F42600-71-D-0001.
- AVCO Corp., Wilmington, Mass. \$2,750,-888. Fabrication and testing of Mk 11C Minuteman reentry vehicle. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-69-C-0242.

29—The Space and Missile Systems Organization, AFSC, Los Angeles, Calif., issued the following contracts:

- Honeywell, Inc., St. Petersburg, Fla. \$1,409,527. Guidance and control systems for Minuteman III. F04701-69-C-0176.
- TRW, Inc., Redondo Beach, Calif. \$1,-490,000. Development of a computer program for utilization of Minuteman II and III. F04701-69-C-0179.
- Holmes and Narver, Inc., Los Angeles, Calif. \$2,624,581. Continuation of maintenance and operation of the Point Barrow Navy Research Site from Oct. 1, 1970, to Sept. 1, 1971. Alaskan Air Command, Elmendorf AFB, Alaska. F65517-69-C-0001.

—The Aeronautical Systems Division, AFSC, Wright-Patterson AFB, Ohio, issued the following contracts:

- General Electric Co., Cincinnati, Ohio. \$102,217,094. TF-39 engines. Evendale, Ohio. AF33 (657)-15003.
- Republic Electronic Industries, Inc., Melville, N.Y. \$1,283,136 (contract modification). Design and fabrication of a test set for the maintenance of airborne navigation equipment. F33657-70-C-1005.
- Teledyne Ryan Aeronautical Co., San Diego, Calif. \$9,285,806. BQM-34A aerial target drones, spare parts and special support equipment. F33657-71-C-0131.
- General Dynamics Corp., Fort Worth, Tex. \$15,687,930 (contract modification). F-111 aircraft. AF33 (657)-13403.

30—The Boeing Co., Seattle, Wash. \$32,797,-800. Minuteman III missile spare parts and force modernization ground equipment. Seattle and Ogden, Utah. Space and Missile Systems Organization, AFSC, Los Angeles, Calif. F04701-70-C-0136.



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## **Blue Ribbon Action Committee Appointed**

Secretary of Defense Melvin R. Laird has announced a Blue Ribbon Action Committee to work on implementation of decisions made by himself and Deputy Secretary of Defense David Packard to achieve improvements in Defense Department management.

Secretary Laird stated the mission of the committee is not to restudy the work of the Fitzhugh Panel, but to expedite the implementation of decisions as they are made.

"This committee," he said, "will work out the details of the implementing [actions] . . . so that there will be no interruption to continued combat readiness of our forces."

The committee is headed by Assistant Secretary of Defense (Administration) Robert F. Froehlke. Other members of the committee, and the Service or Defense Agency they represent are:

- Office of the Secretary of Defense—David O. Cooke, Deputy Assistant Secretary of Defense (Administration).
- Office of the Joint Chiefs of Staff—Vice Admiral John P. Weinell, Director, J-5 (Plans and Policy).
- Department of the Army—Major General David S. Parker, Chairman, Special Review Panel, Office of Army Chief of Staff.
- Department of the Navy—Rear Admiral Frank W. Vannoy, Assistant Deputy Chief of Naval Operations, Plans and Policy.
- Department of the Air Force—Major General George J. Eade, Director of Plans, Office of the Deputy Chief of Staff, Plans and Operations.
- Marine Corps—Brigadier General Herbert L. Beckington, Assistant Director of Personnel, Headquarters, U.S. Marine Corps.

## **Navy To Retire 58 Ships**

Secretary of the Navy John H. Chafee has announced plans to retire 58 additional ships. The retirements are a continuation of the Navy's program to adjust to fiscal restraints and to remove older vessels from the Fleet.

Nine of the 58 ships are major combatants, with the remainder being auxiliary, amphibious warfare and mine warfare ships. The aircraft carrier USS Shangri-La (CVS-38), homeported in Mayport, Fla., is the largest of the ships, with a total complement of 1,630 officers and men.

About 483 officers and 6,551 enlisted men are assigned to the designated ships.

The average age of the ships is 21 years, with the oldest age 27. The Shangri-La is 26 years old. Thirty of the ships are assigned to the Pacific Fleet; 28 to the Atlantic Fleet.